DOCUMENT RESUME

ED 272 399 SO 016 901

AUTHOR	Meijer, Henk, Ed.
TITLE	The Geography of the Netherlands 1964-1984. I.D.G. Bulletin 1983/84.
INSTITUTION	Information and Documentation Centre for the Geography of the Netherlands, Utrecht.
PUB DATE	84
NOTE	61p.; For the 1982/83 I.D.G. Bulletin, see ED 241 416. Photographs and maps may not reproduce clearly.
AVAILABLE FROM	IDG, Geographical Institute, P.O. Box 80 115, NL 3508 TC Utrecht, Netherlands (free).
PUB TYPE	Reference Materials - Geographic Materials (133) -- Collected Works - Serials (022)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Agriculture; Civil Engineering; *Demography; Energy; Environment; *Geography Instruction; Industrialization; Industrial Structure; International Trade; Mining; *Physical Geography; Regional Planning; Specialization; Transportation
IDENTIFIERS	*Netherlands

ABSTRACT

The 20th anniversary of the establishment of the information and Documentation Center for the Geography of the Netherlands (IDG) occurred on September 21, 1984. To mark this anniversary, the 1983/84 issue of the "IDG Bulletin" is devoted to a review of the past 20 years. The first section consists of four review articles by specialists: (1) "Demography" (F. van Poppel); (2) "Twenty Years of Physical Planning" (J. M. L. K. Kits Nieuwenkamp); (3) "Agriculture and Horticulture: The Age of Specialization" (A. van Dijk); and (4) "From Industrial Emancipation to Restructuring" (M. de Smidt). The second section, "Statistics," concerns statistics in a number of areas that occur frequently in geography education lessons: population and area, working population, agriculture and horticulture, mineral extraction and industry, foreign trade, and environment. The third section, "Brief Notes," gives information about the latest developments in and around the port of Rotterdam, the Delta Project, and the Zuiderzeeworks. It further describes the revision (1983) of the Urbanization Report, some aspects of the production of energy, and pollution of the Rhine. The bulletin concludes with an article by H. S. Verduin-Muller, chairman of the IDG board, describing activities of the IDG over the past 20 years. Appendices provide a bibliography and a sheet index to topographic maps. (LH)

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Cover Photo
Examples of changes in the Netherlands in recent decades as expressed in the landscape: the port complex of East Flushing along the Western Scheldt, in the province of Zeeland. Looking to the northwest, we see in the foreground the new port zone, the development of which began in the 1960's in an area reclaimed from the channel which previously separated the islands of Walcheren and South Beveland. We also see in the foreground the Borssele nuclear power station on the left and the Total oil refinery on the right. In the background is the mainly agricultural island of Walcheren; the provincial capital of Middelburg can just be made out on the left. On the right is Lake Veere, with the Veere Dam on the seaward side, completed as part of the Delta project in 1961.

information and documentation centre for the geography of the netherlands

i.d.g. bulletin

1983/84

Editor:
Henk Meijer

Utrecht/The Hague, 1984

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ACKNOWLEDGEMENTS

Publication:	Information and Documentation Centre for the Geography of the Netherlands, in collaboration with the Ministry of Foreign Affairs
Editorial:	H. Meijer, Information and Documentation Centre for the Geography of the Netherlands

Photographs:

Cover,II,III,VII,X,XI	Bart Hofmeester, Rotterdam
IV	Kors van Bennekom, Amsterdam
V	Marcel Minnée, The Hague
VI	Public Relations Foundation for Agriculture and Horticulture, The Hague
VIII	Aerophoto, Schiphol
IX	Municipality of Enschede

Figures:

1-17	devised by F. van Poppel, Netherlands Inter-University Demographic Institute
18	after: Atlas of the Netherlands, State Publishing House
19	after: Structure Sketch for the Urban Areas, 1984
22	after: Government Service for Land and Water Use, Utrecht
23-27	devised by M. de Smidt, Geography Department of the University of Utrecht

Cartography:	T. Woudstra, Drawing Office of the Geography Department of the University of Utrecht

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Printing: Smiet Offset b.v., The Hague

FOREWORD

On the occasion of the twentieth anniversary of the IDG, I am pleased to accede to the request of Prof. Verduin-Muller, Chairman of the Board of Management of the IDG, to write a foreword to the Twentieth Birthday Issue of the IDG Bulletin, covering the period 1964-1984.
During this period the IDG has built up an outstanding name for itself both in the Netherlands and abroad.

In 1964 it was decided to establish a Centre whose tasks would include the tracking down and elimination of erroneous information about the Netherlands in foreign school geography textbooks.
It was not until 1971, however, that the IDG was able to give its aims more concrete form. The past few years have shown that yesteryear's initiative has become today's success.
This Bulletin and the reports of previous years reveal that the IDG devotes a considerable part of its efforts to preventing the creation of a false picture of the Netherlands abroad. One of the ways in which it does this is through the distribution of well-conceived and well-produced publications in many languages.

I join the Directorate of the IDG in the hope that this initiative, which originated in the Council of Europe, will be followed by other countries. For the IDG Directorate and staff it is a privilege to be operating on a lonely summit almost alone in Europe, but it will also be a challenge to maintain that position when other countries follow the Netherlands' lead.

In offering my sincere congratulations on the occasion of its twentieth anniversary, may I also express the hope that the IDG will be able to meet the challenge.

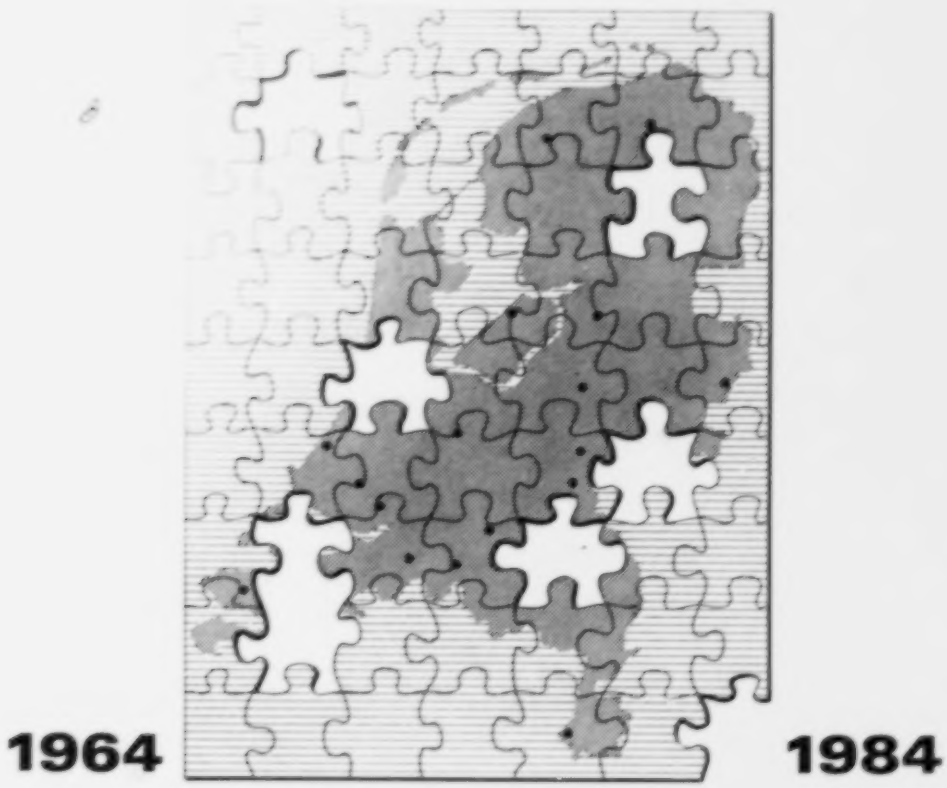
Mrs. N.J. Ginjaar-Maas
State Secretary of Education and Science

I — THE GEOGRAPHY OF THE NETHERLANDS, 1964-1984

Introduction

21st September 1984 marked the 20th anniversary of the establishment of the ***Information and Documentation Centre for the Geography of the Netherlands*** (see further p.50 for details of the Centre's origins, history and activities). To mark the anniversary the leading article of this issue of the IDG Bulletin takes the form of a review of the past twenty years. Four specialists discuss important developments which have taken place during the past two decades in various spheres of Dutch society:

- **DEMOGRAPHY** — e.g. the rapid fall in the rate of natural increase and the marked changes in the patterns of marriage and migration;
- **PHYSICAL PLANNING** — from dispersal to concentration, from 'objectives planning' to 'process planning';
- **AGRICULTURE AND HORTICULTURE** — the age of specialisation, economies of scale and intensification;
- **INDUSTRY** — e.g. restructuring and changing regional policies.



I.1. Demography

*Author: F. van Poppel *)*

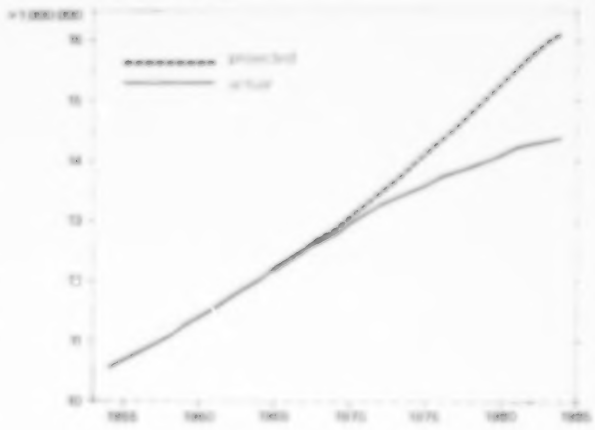
I.1.1. INTRODUCTION

In February 1965 the Central Bureau of Statistics (CBS) published a projection of the growth of the Dutch population to the year 1980, which was followed a few months later by a similar projection for the period 1980-2000. The results of these projections did not give rise to much sensation in the press, since the public had already been prepared for some years for the 15 million forecast by the CBS for 1980 and the 21 million forecast for 2000. The same figures or figures which were only a little lower than those proposed by the CBS for 2000 had already been brought to the public's attention since 1960 in widely divergent publications, with the consequences of this great population increase being described in very sombre terms.
In 1965 these warnings penetrated to government level. The government statement issued by the Cabinet in April 1965 described the rapid population growth in tandem with the increase in prosperity as a pressing internal problem.
There was no question of plans to regulate the population numbers, however, and such plans also proved to be unnecessary. Less than twenty years after the Cabinet had elevated the rapid population growth to problem number one, the prospects for Dutch population growth had been reversed. The government now seems to be concerned with the perspective of a falling population. The government's view about the population changes, published in February 1983, which was perhaps somewhat exaggeratedly interpreted by the State Gazette in the headline "policy measures, if necessary, to stimulate the number of births", speaks volumes here.
A demographic revolution of unprecedented extent has seen to it that, in a time span of less than twenty years, the enormous population increase expected between 1965 and 1980 failed to materialise, and it has now made likely the prospect of 15.3 million in 2000 instead of the anticipated 21 million, and even a fall in population after 2005.
Beginning with the situation at the beginning of the 1960's, the present article gives a sketch of this demopgraphic revolution by investigating the projections for the 1970's and '80's and comparing them with the actual developments during that period. The sketch of the demographic future as it appeared at the beginning of the 1960's is based on the CBS projections referred to above.

I.1.2. DEMOGRAPHIC EXPECTATIONS AND DEMOGRAPHIC REALITY

On 1st January 1964 the Netherlands had somewhat more than 12 millions inhabitants. The CBS predicted in 1965 a further increase of this number to more than 16 million on 1st January 1984. Fig. 1 gives a comparison of the future

Figure 1 - Population



population trend regarded as most likely in 1965 with the actual population trend during the period 1954-1983. The figure clearly shows that the expected growth for the years after 1964 was in line with the actual trend up to that year. The actual population growth during the 1970's and '80's remained well below expectation, however. There were, in fact, 1.8 million fewer inhabitants on 1st January 1984 than the 16.2 million which had been expected.

National population trend are dependent on the natural population increase (births and deaths) and on the balance of migration to and from other countries. Population projections, therefore, have to take account of the expected trends in both components of population growth.
As fas as foreign migration was concerned, however, it was not felt in 1965 that a sufficiently firm basis existed for making a forecast. The varied picture presented by post-war migration (in respect of both volume and composition) and the steadily diminishing gain from foreign migration up to 1964 were sufficient reason to exclude this factor from the calculations. This meant that the future population growth was dependent exclusively on the annual number of births and deaths, i.e. on the expected annual natural increase. Fig. 2 compares the *expected* natural increase in 1965 and the related *total* expected annual increase with the *actual* trends in both figures — again since 1954. Remember that the figures for actual total growth also include migration gains and losses. To avoid any misunderstanding, these are also shown separately in fig.2.

The conclusion is clear: right from the mid-1960's the actual growth lagged behind the expected growth. This was even more true of natural increase: compared with a predicted natural increase of 244,000 in 1983, there was an actual increase of 52,000, the lowest figure ever during the post-war period. It is mainly the much lower natural increase that has so radically changed the Dutch demographic situation and its prospects from what was expected 20 years ago. The remainder of this article will be concerned with the expectations about the natural increase 20 years ago and with the discrepancy between expectation and reality.

*) The author is attached to the Netherlands Inter University Demographic Institute in Voorburg.

Photo II — Suburbanisation north of Amsterdam; right, along the canal, the old core of the village of Schermerhorn, in the foreground a new residential area. In the background the rectangular landscape of the Schermer, a lake drained in the 17th century (looking west).

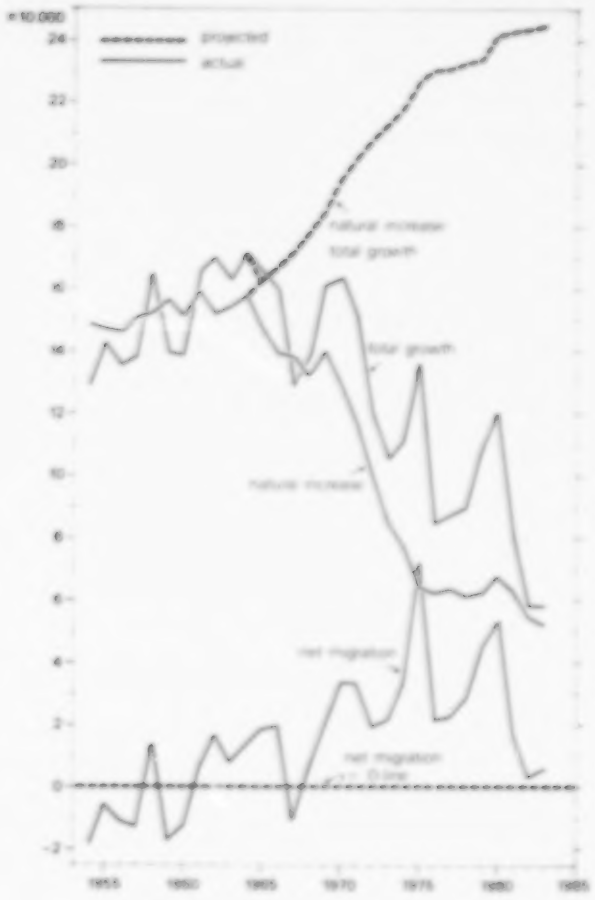
the 1970's to discourage the establishment of new or additional industrial activity in the West, and the incentives of the physical planning grants (ROT), made under the Investment Account Act (WIR), proved either not to work in practice, or had to be deliberately abandoned.
These spatial steering mechanisms came to stand alongside the traditional economic subsidy methods. Apart from the question of whether this policy yielded any results, it has to be observed that the policy emphasis has meanwhile been shifted from the North Netherlands and South Limburg to the support of the urbanised areas in the West. This is most clearly expressed in the Structure Sketch for Urban Areas of 1983. Because there is now an economic recession, with an increase in unemployment and rising energy prices, as well as a fall in both private and public purchasing power, the emphasis must now be placed on making the best use of existing investments. Examples would be: making full use of the opportunities offered by Almere, Lelystad and Zoetermeer and paying greater attention to infilling the existing built-up areas. At the same time, clear limits have been set to the functions to be performed by the growth centres and growth towns (photographs II and III).

— Nucleated dispersal
Against the background of the above, it will come as no surprise that dispersal, even though it was conceived in a nucleated form, evolved increasingly towards concentration. The centre of the city has been given priority. When the possibilities there have been exhausted, it will be the turn of the urban fringe rather than the growth centre, even though there is one in the vicinity. The existing potential of the older towns has been underestimated for a long time. Nor will the new towns which have been built in the interim escape the philosophy of the compact city. If the new policy takes effect, maximum use will be made of the existing urban area at the expense of overspill, employment planning will be given greater prominence alongside the original residential planning, and new strategies and instruments will have to be devised. The emphasis will shift increasingly from the use-development-management triology referred to earlier, towards development and management. Stress will have to be laid on intensification of land use in the existing urban area, with all the attendant consequences.

I.2.5. CONSEQUENCES OF THE POLICY

We may now ask how the formulated policy has actually affected the development of the country. Would the Netherlands have been noticeably different without a physical planning policy or with one that had a markedly different objective? Has physical planning so affected population trends or

Figure 2 – Natural increase, net migration and total growth



I.1.2.1. Expectations about mortality

The CBS had a large measure of success in predicting one of the two components of natural increase, namely, the annual number of deaths. At the beginning of the 1980's only 4 to 6,000 fewer deaths were recorded annually than had appeared probable in 1965. The estimate of the future number of births proved to be very inaccurate, however. Up to the end of the 1960's the overestimate was limited to some 40,000 births per annum, but in 1983 it was no less than some 200,000 per annum (fig.3). We can only discover the reasons for the success of the one component of the population projection and the failure of the other by testing whether or not the hypotheses underlying the projections were borne. We begin with the mortality trends.

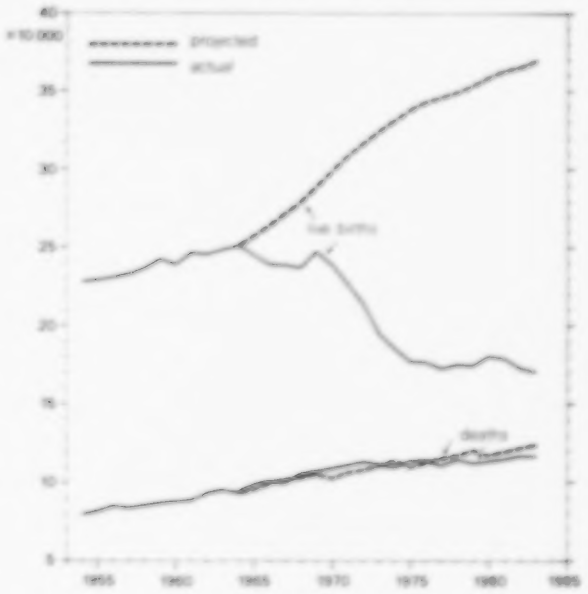
According to the CBS forecasters the most likely situation was that the fall in the death rate for individual ages recorded in the years up to 1964 would continue during the period 1965-1980. A further fall in mortality was considered likely after 1980. An exception was made only for men in the 47-71 age group, for whom there had already been a rise in the death rate before 1964.

It was assumed that the negative trend shown by this age group would continue until 1980, although it would be less pronounced, while a slight improvement in the group's situation was expected after 1980.

Fig.4 compares the CBS projections of trends in male and female mortality with the actual mortality trends, on the basis of average life expectation at birth. The latter figure indicates how many years a new-born baby boy or girl can expect to live if the death rates calculated for people of different ages in a particular year were to continue to apply to him/her during the rest of his/her life.

Here, too, the projection of mortality trends proves to have been very accurate: the deviations between the expected trend and the actual figures are very small. In nearly all instances a greater improvement in mortality rates was *expected* than actually occurred, except for men during the most recent period. The deviations between the projected and actual trend nowhere exceed 0.79 years, which is very little with a life expectancy of 77 years.

Figure 3 – Numbers of live births and deaths



I.1.2.2. Expectations about marriages and household formation

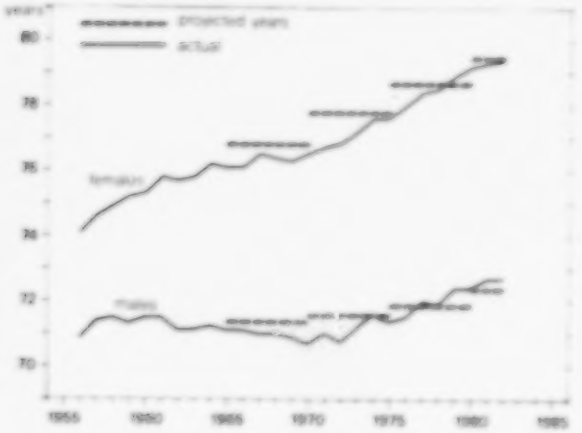
The CBS proceeded from the assumption in 1965 that the future trend in the *number of births* could best be approximated by calculating: a. how many women in each age group would bear children in the future and, b. what the level of fertility of these women would be during the childbearing phase. It was assumed, on the basis of the situation prevailing in the mid-1960's, that there was a close correlation between participation in the reproduction process and the fact that the women were married. It was assumed that in the future, as in the years before 1965, only about 1.5% of all live births would be to unmarried or widowed and divorced women.

In estimating the future number of married women – in the group which was siginificant for reproduction – it was assumed that the trend towards younger marriages, which had become apparent during the 1950's and '60's, would continue. An increase in the percentages of married women

among the older age groups was also assumed, partly as a result of the reduction in the dissolution of marriages caused by the falling death rate.

As far as the numbers of children produced by these married women was concerned, it appeared most probable in the mid-1960's that there would be a further increase in

Figure 4 — Average life expectancy at birth



fertility among women under 30, since the increasingly early age of marriage among this group was leading to a shift in the balance towards the younger, more fertile, age groups, while the observable tendency to concentrate births more than before at the beginning of the marriage was having the same effect. Obviously, as a result of the above assumptions, the fertility of women over 30 was expected to decline. We shall examine below to what extent the above assumptions about the process of household formation and fertility have been borne out by reality.

Figure 5 — Percentage of women still married by age group

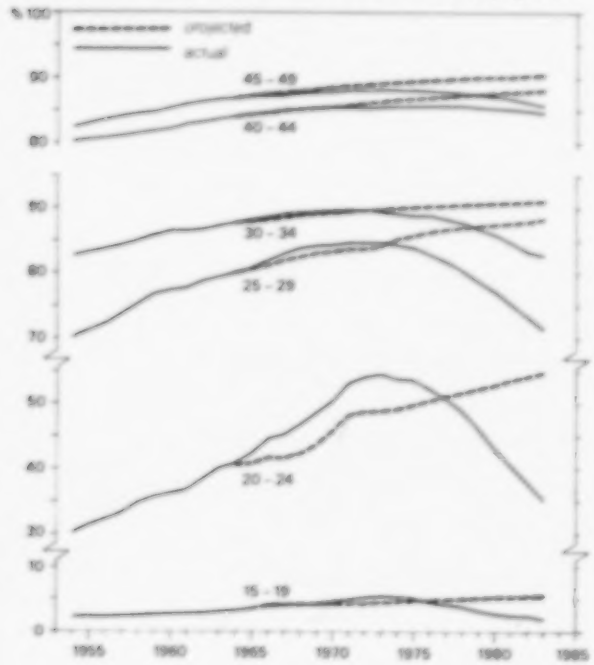


Fig.5 gives for the age groups 15-19, 20-24, 25-29 and above (up to and including 45-49) the percentage of married women among the total number of women in the age group concerned. The comparison between expectations and reality shows that, until about 1975, more women in the four youngest age groups (women under 35) were married than was expected. Whereas it was assumed in the CBS projection that the rising trend would continue after 1975, the percentages of married women began to fall after this date. This resulted in large discrepancies between the expectation and the reality, particularly among the 20-24 and 25-29 age groups. On 1st January 1983 there were 19 fewer married women among every 100 women in the 20-24 age group and 17 fewer among the 25-29's.

The result of the trend illustrated in fig.5 was an additional boost to the number of births up to the mid-1970's, while, in the following years, the declining percentage of married women was a major factor in the failure of the number of births to reach the level expected.

Further attention will be paid later to the factors underlying this development, but we wish to consider first whether the fertility of married women did match expectations. This is assessed with reference to the marital fertility rate, a figure which indicates how many live births occur per 1000 married women of child-bearing age (15-49 years).

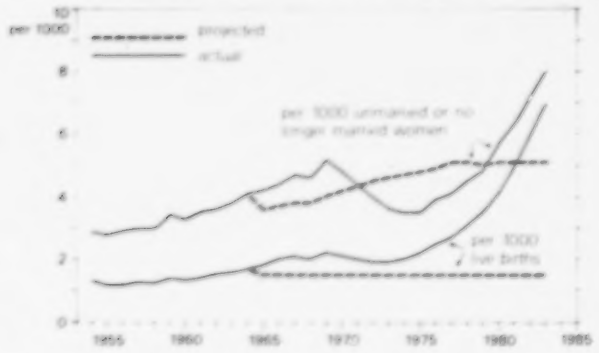
Fig.6 illustrates clearly how radically the reproductive activity of Dutch married women changed during the period 1965-1983: in scarcely fifteen years the marital fertility rate was halved! This is all the more surprising, since it was expected that, after a brief rise, the figures would remain at about the level of the mid-1960's.

Figure 6 — Live legitimate births per 1000 married women aged 15-49 years

This is the second fundamental change in the demography of the Netherlands during the 1960's and, again, we shall return to it later.

Remarkable developments, which were incidentally clearly related to what was taking place in the sphere of marriage and dissolution of mariage and to reproduction within marriage, also occurred in the field of reproduction outside marriage. Statistically, it was only a marginal phenomenon, but it can be considered an important signal of new trends in marriage and household formation (fig.7).

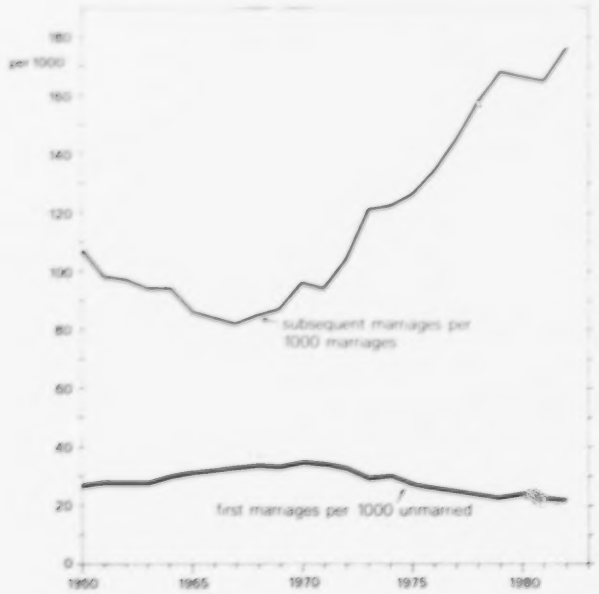
Figure 7 — Live illegitimate births per 1000 unmarried or no longer married women aged 15 - 49 years, and per 1000 live births



As stated earlier, the CBS still assumed in 1965 that births outside marriage would form a constant percentage of all births. Expressed in terms of per 1000 unmarried or no longer married women, this would have amounted to a very small increase in fertility outside marriage. But here, too, the trends differed from what was expected. During the 1970's fewer children were produced by unmarried women than was considered probable in 1965, while from 1980, the reality greatly exceeded the expectations. It must be remarked that this trend, even if only to a small extent, has helped to reduce the discrepancies between the numbers of projected and actual live births.

The comparison between expectations and reality has clearly brought to light the breaks in the demographic trends during the past 20 years. It is now time to examine these trends in somewhat greater detail.

Figure 8 — First and subsequent marriages per 1000 unmarried and per 1000 marriages



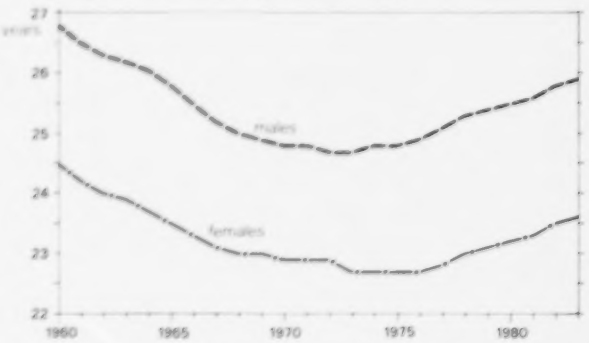
I.1.3. CHANGES IN MARRIAGE AND HOUSEHOLD FORMATION

I.1.3.1. Marriage and dissolution of marriage

From the mid-1950's there was an increasing number of marriages in the Netherlands. There were about 85,000 marriages in 1953, 103,000 in 1964 and no less than 123,000 in 1970. After that year the annual number of marriages gradually declined to 78,000 in 1983, a number that was lower than in any previous post-war year.
Fig. 8 shows that the nature of these marriages changed in the course of time: between 1960 and 1967 the percentage of marriages involving a man or woman who had been previously married declinad to 8%. After 1967 the situation changed rapidly and, by 1982, in 17% of marriages, one or more of the partners had been previously married.
The most important group, however, are still those marrying for the first time. The percentage of marriageable men and women marrying for the first time increased after 1960 in parallel with the absolute number of marriages before subsequently declining to a prewar level.

These men and women marrying for the first time began marrying at an increasingly younger age after 1960, but here, too, there was a return to earlier conditions after 1975. The age of marriage rose again to the level prevailing in the mid-1960's, mainly because of a very sharp fall in the number of marriages below the age of 25 (fig. 9).

Figure 9 — Average age at first marriage

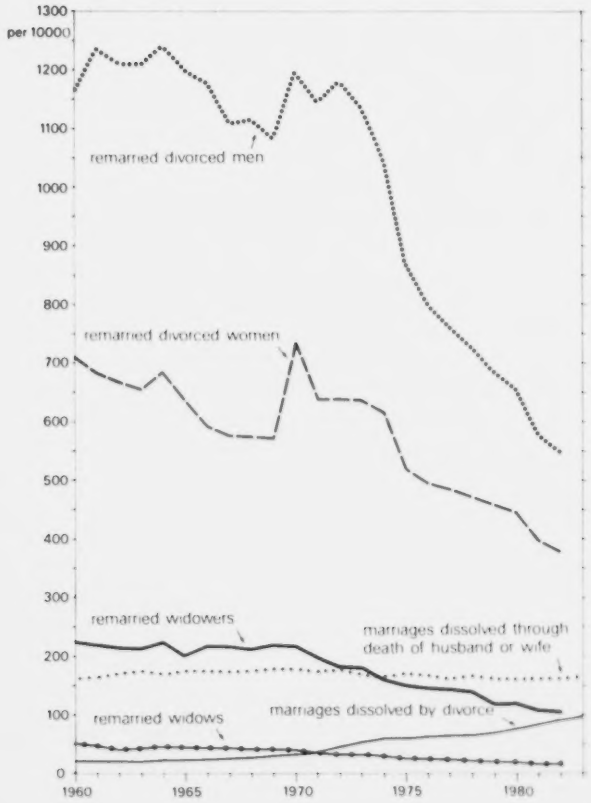


The non-realisation of expectations about the percentage of married women was partly the result of changes in the rate at which marriages were dissolved. In 1960, 5670 marriages were terminated by divorce, but from the mid-1960's there was a great increase in this form of dissolution of marriage, from 10,320 divorces in 1970, to more than 20,000 in 1975 and over 30,000 in 1982.

This sextupling of the absolute number of divorces amounts in relative terms (divorces as a percentage of existing marriages in existence at a particular date) to a fourfold increase in the divorce rate. In 1983, divorces already represented 37% of all forms of marriage dissolution. An increasingly smaller proportion of those whose marriage was dissolved

remarried. Since 1960 the remarriage rate of both divorced and widowed men and women has halved (fig. 10).

Figure 10 — Dissolved marriages and persons remarrying per 10,000 marriages and per 10,000 persons present of the relevant group



The decline in the frequency of first and subsequent marriages and the increase in the dissolution of marriage did not mean that people no longer entered into relationships with each other. What it meant was that marriage was being replaced in part by cohabitation. Research in 1979 and 1982 revealed a great increase in the percentage of cohabiting women between these dates: from 1 to 3% among 18-19 year olds, from 10 to 16% for the 20-24 age group. while 10% of 25-29 year olds cohabited.

Besides cohabitation there were also larger numbers of single person households (single people, persons living alone etc.). There were ca 391,000 of these in 1960, 699,000 in 1971, 835,000 in 1977 and 1,128,000 in 1981. Single person households now account for 22% of all households, compared with only 12% in 1960, which is a high percentage in comparison with the 3.7% cohabiting (2).

I.1.3.2. Fertility within marriage

Household formation began with marriage, but one could not speak of a "real" household until children started to appear in the marriage. Not only was that the prevailing norm in the 1960's, but childless marriages scarcely occurred in practice (fig. 11).

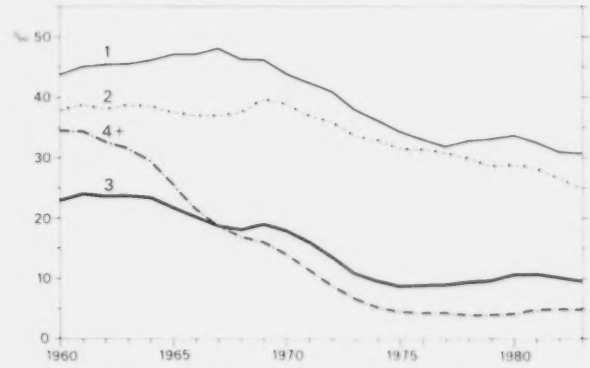
Figure 11 — Likelihood of increase of families with no children

Until about 1968, a child was produced in 86-89% of marriages, but after 1969 this figure declined steeply: to 70% in 1977. There was subsequently an increase to ca. 80%. Childlessness (voluntary, we may assume) thus clearly increased during this period.

Although the percentage of marriages in which at least one child was born decreased between 1960 and 1982, there was at the same time a steep increase in first births within marriage as a proportion of total births: from about 32% in the early 1960's to about 43% from the mid-1970's. The most striking feature was the trend in 4th and later births within marriage: these accounted for a quarter of the births in 1960, but for only 5-7% after 1974.

Now if the figure used earlier to describe the trend of fertility within marriage - the marital fertility rate - is broken down into 4 components relating successively to the 1st, 2nd, 3rd and 4th and later births, it is found that nearly a half of the total decline in the marital fertility rate is accounted for by the absolute fall in the number of 4th and later births (fig. 12).

Figure 12 — Fertility of marriage by rank order of births per 1000 married women aged 15-49 years

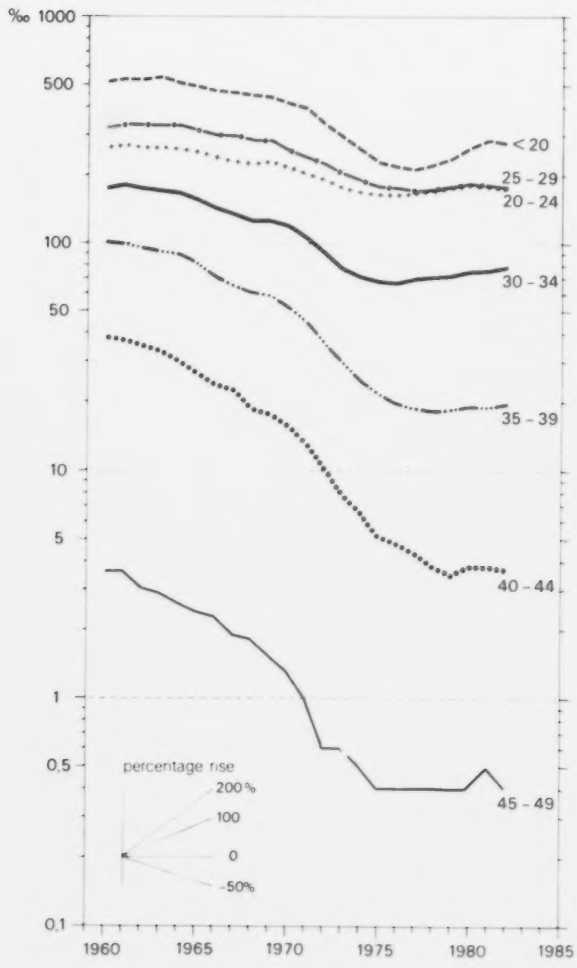


The falls in the numbers of 1st, 2nd and 3rd births have contributed in approximately equal proportions (17-19%) to the decline in the marital fertility rate.

Considered from the standpoint of the age of the wife, it is particularly the older women whose fertility has declined: among women aged 40 and over the decline was 90%, among the 35-39 year-olds it was 80%. Compared with 1960, the fertility rates for the other age groups were also markedly lower in 1982. The difference is, however, that for age groups younger than 35, the trough in the fertility rate was reached in about 1975 while, after this date, there was occasionally a

slight rise in fertility, e.g. among the under 20's and the 25-34 year-olds (fig. 13).

Figure 13 - Fertility of marriage by age of the wife per 1000 married women in each age group



I.1.3.3. Fertility outside marriage

There were also surprising changes in the field of fertility outside marriage. There was a gradual increase between 1960 and 1969, but a decline between 1970 and 1975. After 1975, however, there was again an increase in the number of children born to unmarried and widowed and divorced women, which was completely the converse of what was happening to the marital fertility rate. Fertility outside marriage was increasing particularly among women aged 25-34, and the average age at which women bore their first illegitimate child rose rapidly again after a slight fall in the 1960's (to 21.4 years in 1971), to 24.5 years in 1982.

It is striking that the birth of an illegitimate child is now less a unique event in a woman's life than it was in the 1960's. Fertility outside marriage in the 1980's is a phenomenon of the large cities, and perhaps even more so than previously. Of the children born in Amsterdam in 1981, for example, 20% were born to unmarried or divorced and widowed women. Equally striking is the fact that fertility outside marriage is highest among women with a Surinam or Netherlands Antilles ethnic background. The above factors together are a sign that the character of fertility outside marriage has fundamentally changed: from predominantly unwanted and unplanned births among mainly young women who allow themselves to be "surprised" only once, to predominantly planned and wanted births within a form of non-marriage relationship, whether a traditional one (as among the Surinam and Netherlands Antilles ethnic groups), or as a modern form of relationship.

The trends described here in the direction of fewer marriages, later marriages, more dissolved marriages, having a smaller number of children within marriage and relatively more children outside marriage — besides other factors such as income trends, the housing situation etc. — have radically changed the Dutch family and household structure. Married couples with children still form a majority - but an increasing small majority - of all households consisting of more than one person, but married couples without children occur somewhat more frequently than in 1960. Although more is written and spoken about them than previously, there are relatively fewer single-parent families than 20 years ago.

I.1.4. MORTALITY TRENDS

The trend in the mortality rate has already been described in outline. The average life expectancy at birth increased by 4.1 years for females and by 1.2 years for males between 1960 and

Figure 14 — Deaths by age per 10,000 males , females, respectively

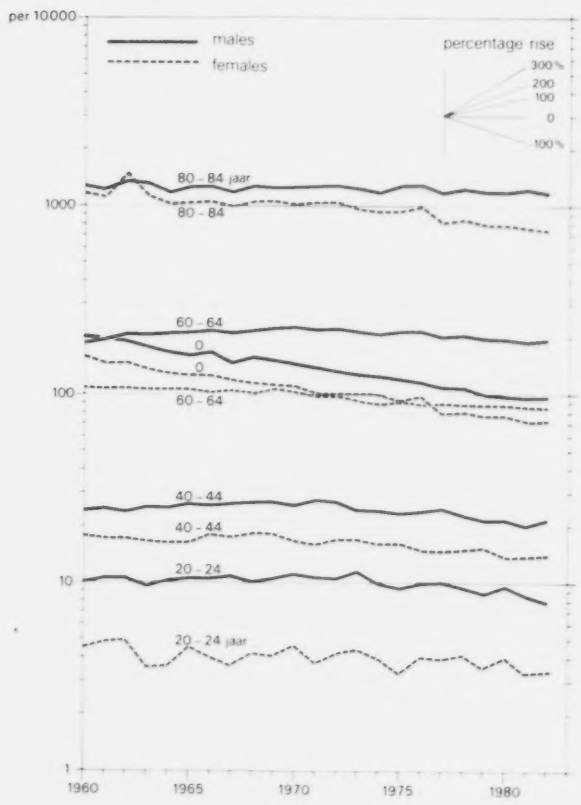


Table 3 — Numbers of cattle, pigs and poultry

	1964*)	1970*)	1970**)	1975**)	1980**)	1983**)
Cattle Population (x 1000 head)						
Holdings with cattle (x 1,000)	179	145	131	108	87	80
Total cattle	3,751	4,366	4,314	4,956	5,226	5,411
of which:						
milch cows and cows in milk	1,723	1,906	1,896	2,218	2,356	2,526
store calves	148	438	434	471	582	597
Pig population (x 1000 head)						
Holdings with pigs (x 1,000)	111	84	76	55	44	38
Total pigs	3,525	5,650	5,533	7,279	10,138	10,656
of which:						
store pigs	1,471	3,068	2,984	4,079	5,384	5,500
breeding pigs	5,408	766	758	903	1,255	1,417
Poultry population (x 1 million)						
Holdings with chickens(x1,000)	141	63	53	25	9	8
Total chickens	45.6	56.2	55.4	68.1	81.2	82.2
of which:						
laying hens	19.1	18.3	17.8	28.8	37.4	40.8
table poultry	12.7	30.3	30.1	39.2	38.6	35.1

*) inc.1-10 sbu
**) over 10 sbu

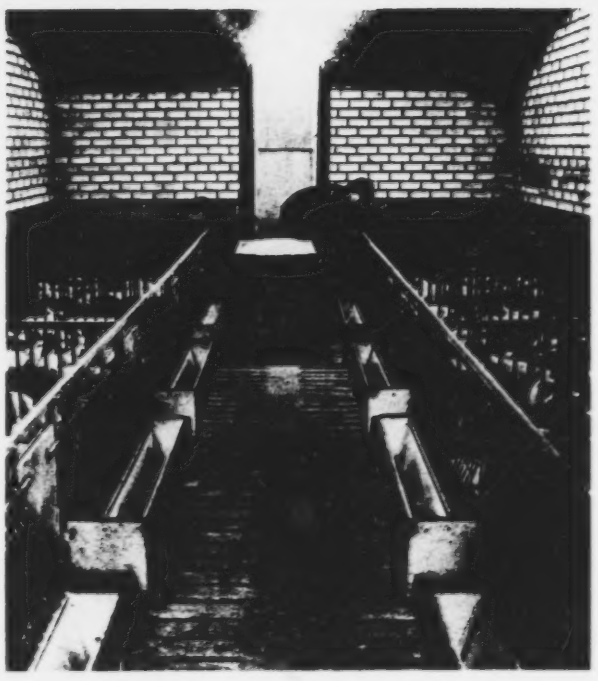


Photo V — Factory farming

Increase in productivity per worker was greatly helped by the tremendous rise in mechanisation. Table 4 shows some figures for a number of important machines. It will be seen that an initial increase was followed by a decline. This is the result of the reduction in the number of holdings, which has since continued without interruption. The peace which townspeople so readily associate with farming is in fact hard to find. The rapids boil on.

The increase of horticulture under glass is undoubtedly also related to the efforts to increase production and earn a higher income through the cultivation of special crops and of primeurs.

At the same time there has been a reduction in open-ground horticulture. Horticulture under glass is characterised by a number of "classical" products such as lettuces, tomatoes and cucumbers. Salad vegetables were the most important glasshouse crops, but the 1970's saw the rise of flower-growing under glass (photograph VII). There has been a steady growth in the latter sector, so that at present the area under glass is divided about equally between salad crops and flowers: over 4,000 ha. of each.

Table 5 — Areas of horticultural crops (ha.)

	open ground	under glass
1964*)	123,906	6,025
1970	110,772	7,236
1975	106,787	7,906
1980	104,075	8,760
1983	106,756	8,825

*) inc.1-10 sbu

Table 4 — Mechanisation

	1964*)	1970	1975	1979
Milking machines (x 1,000)	70.5	85.5	77.8	62.7
Tractors (x 1,000)	111.7	156.4	175.0	186.9
Combine harvesters	5,250	7,500	6,795	6,003
Potato harvesters	1965*)			
(x 1,000)	9.9	10.4	9.7	9.0
Beet harvesters	1965*)			
(x 1,000)	3.3	4.4	3.7	3.2

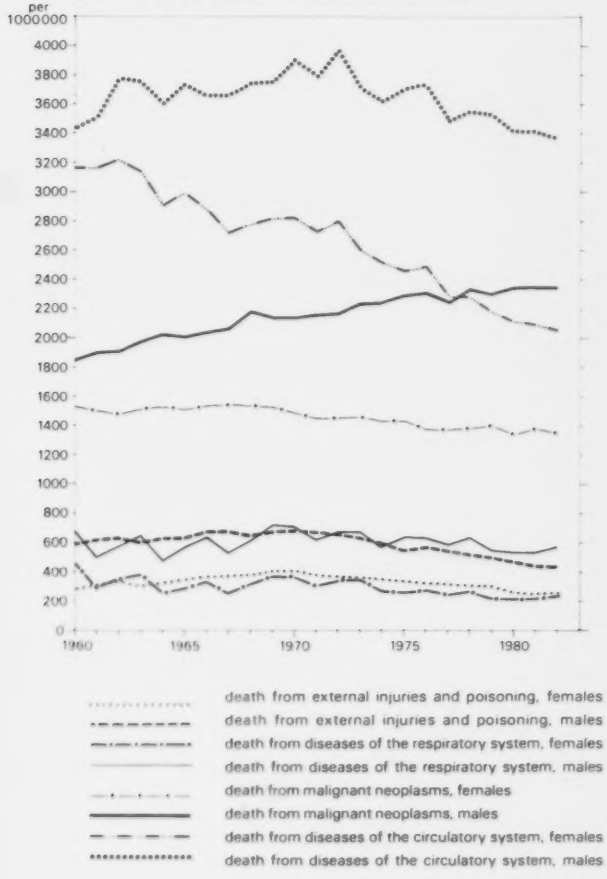
N.B. 1964/65 inc. 1-10 sbu; probably makes no difference.

I.3.6. REFINEMENT OF TECHNIQUES

Technique has not stood still. Horticultural greenhouses are not just glasshouses which provide protection against the wind and cold. They are complex structures in which an artificial climate is created with the aid of electronics. This has now reached such a level of refinement that many growers can no longer manage without the help of a computer. The computer checks and corrects and switches equipment on and off, according to the instructions keyed in by the grower. Increasing use is being made of soilless cultivation techniques. In these the soil is no longer used as a medium in which to root the plants and through which to supply them with water and nutrients. The plants are rooted, for example, in

1982. This unequal trend resulted in a great difference in life expectancy between men and women. Under present-day conditions women live 6.7 years longer on average than men; in 1960 the difference was only 3.8 years.
The death rate did not decline in equal proportion with the rise in life expectancy for every age group between 1960 and 1982. Fig. 14 shows that there has been a constant decline since 1960 for 0-1 year olds. The death rate for other ages under 10 was also halved between 1960 and 1982.
Among women over 20 there was also a steep decline in the death rate (by some 15-35%), particularly among the 70 plus age group. This is shown in fig. 14 for a number of representative age groups. The trend among men was quite different: here the death rate rose until the mid-1970's for ages between 35 and 80 years. The subsequent decline in the death rate for these ages eventually resulted in a lower figure for the 35-60 age group than in 1960 (some 5-12%), but for the 60-80 age group the decline was not sufficient to cancel out the previous rise.
The trend described above is the result of several striking changes in the pattern of the causes of death among the Dutch population. The shifts in causes of death are illustrated in a general way in fig. 15 by means of standardised mortality rates by cause of death. These figures show the number of persons per 1,000,000 men and women, respectively, who would have died annually from a particular cause of death if the age structure of the male and female populations had remained unchanged since 1960.

Figure 15 - Standardised deaths by cause of death per 1,000,000 males and females, respectively



Whe shall limit ourselves here to four causes of death, which account between them for some 80% of all deaths: diseases of the circulatory system, malignant neoplasms, diseases of the respiratory system and external causes of injury and poisoning.
Deaths as a result of external causes showed a considerable increase between 1960 and 1970, but the subsequent decrease was greater than the previous rise. The position of men became somewhat less unfavourable relative to women.
There has been a decrease in the risk of death from diseases of the respiratory system during the past 10 years, but the trend in relation to malignant neoplasms, the second major cause of death, was quite different. There has been a very steep rise in deaths from this cause amongst men, compared with a fall amongst women. Deaths from diseases of the circulatory system increased steeply among men until the early 1970's, but then reverted to their previous level. Among women there was a decline in deaths from this cause of 35% during the same period.
It must incidentally be stressed that the Netherlands is not a unity as fas as mortality is concerned: there are not inconsiderable differences in death rates among the provinces and municipalities.

I.1.5. MIGRATION

When the CBS began work on its projections in 1965, the Netherlands was already no longer the emigration country that it had been in the 1960's. During the period 1960-1982 there was sometimes even a net immigration gain from the traditional emigration countries. Even at the beginning of the 1960's the Netherlands was experiencing a net immigration gain, partly as a result of the arrival of migrants and repatriates during 1960-'62 from Indonesia and the former Dutch New Guinea, and partly from the first arrivals of foreign workers from the Mediterranean countries.
The volume of immigration from the Mediterranean countries initially closely followed economic trends, but after 1972 the immigrant population became less sensitive to economic fluctuations because of changes in its composition. It was no longer men with a skill arriving alone, but female heads of households with their children and women without a profession, travelling alone, who were coming to join their husbands already established in the Netherlands. The requirement for a visa, introduced for Turks in 1980 and for Moroccans in 1983, together with other political, economic and legal factors, resulted in a net migration loss of people with these nationalities in 1982, and a very small migration gain in 1983.
The migration between the different parts of the Kingdom (= Dutch Commonwealth) was still insignificant numerically in the early 1960's. There was a gradual increase up to 1973, but in the two following years immigration from the Netherlands Antilles and from Surinam, in particular, showed a marked increase. After 1975, the year in which Surinam became independent, immigration declined, but then increased again. This increase and the subsequent decrease in 1981 were related to the revision of the migration agreement between the Netherlands and Surinam and the introduction of visas.
The result of the migration movements discussed briefly above was that the Netherlands experienced almost continuous immigration gains between 1960 and 1982.

Emigration was relatively constant (varying between 46,700 and 67,500 per annum), but immigration was responsible for the fluctuations in the migration gain, from a minimum of 45,000 to maxima of 112,000 and 127,000 (fig. 16).

Figure 16 - Numbers of immigrants and emigrants

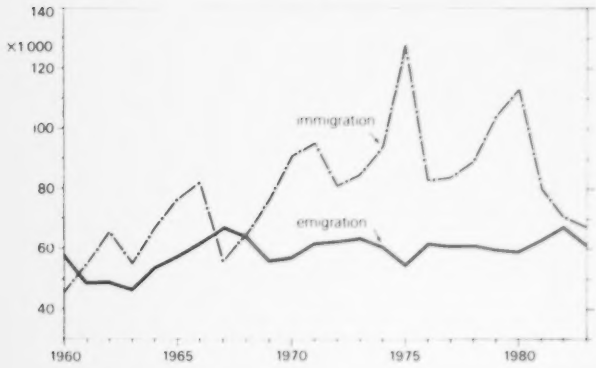
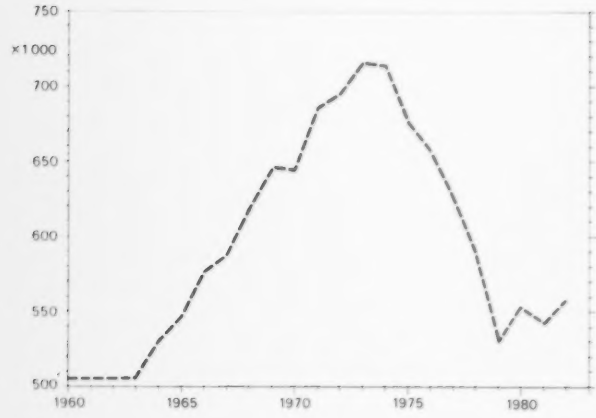


Fig. 17 shows that there were also great changes in the pattern of internal migration during the period 1960-1982. The total number of persons changing their residence in the Netherlands showed a marked increase up to 1973, but began to decline after that year. There were also great changes in the direction of migration (fig. 18).

Figure 17 - Numbers of internal migrants



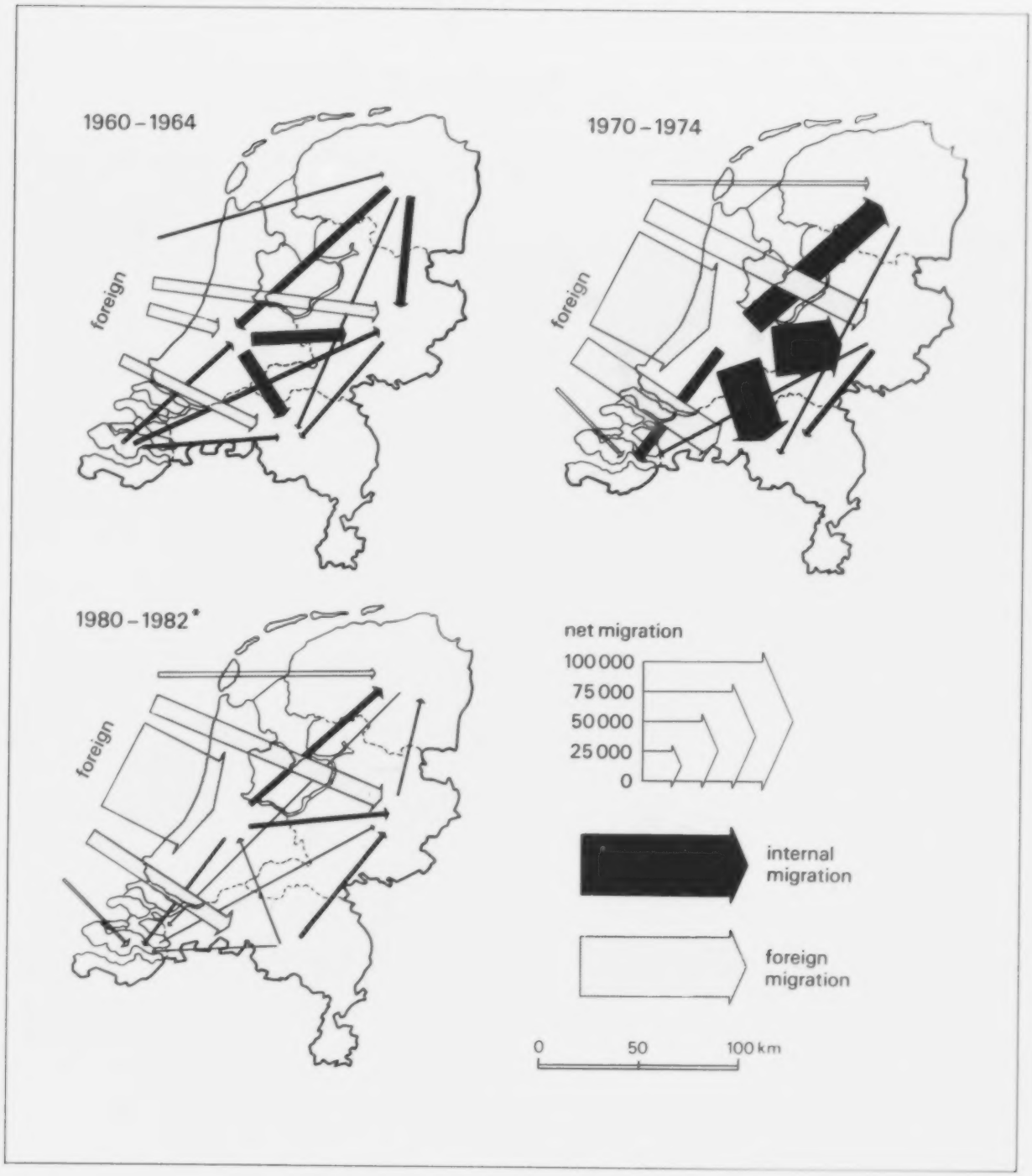
The traditional large-scale movement to the west of the country was already a thing of the past in the early 1960's. People from the West were already moving to the South and East between 1960 and 1964, while for people from the North and Zeeland, everywhere seemed to be better than in their own region. During the second half of the 1960's, and even more so in the 1970's, migration from the West to the South and East and, later, to the North and South West Netherlands assumed massive proportions. This situation came to an end during the period 1980-82. The North still attracts people from the East, West and South Netherlands, but to a much less extent. The East and South West still receive people from the West, but fewer than before.

The South is at present losing migrants to all the other regions. This means that people are remaining in the West more than they were during the preceding decade.
The Southern Lake IJssel polders show a net migration gain from all regions, while every region shared in the settlement of migrants from abroad (both Dutch and non-Dutch citizens), particularly during the 1970's. During the period 1960-1982 nearly 320,000 more people settled in the West Netherlands from abroad than migrated from the West to settle abroad. The East and North Netherlands, with a net migration gain of over 70,000, also attracted a relatively large number of migrants.

I.1.6. CONCLUSION

The demographic changes during the 1960's and '70's are largely responsible for the change in the face of Dutch society. The increase in fertility outside marriage and the decrease in the marital fertility rate, the increasing number of divorces and the emergence of new ways of living together may be interpreted as a concrete expression of, or as a further stimulus to, great changes in the Netherlands in ideas about marriage, sexuality and female emancipation, as well as in actual behaviour in this regard. This new demographic pattern has provided men, but particularly women, with greater opportunities to live their lives in the way that they think best.
Changes in foreign migration have given the Netherlands a higher proportion of ethnic minorities. They have enriched our culture, but at the same time, tolerance towards foreigners has decreased and problems have arisen in the fields of education, housing, employment and welfare.
The changing demographic situation has also contributed to other current social problems and the developments of the 1960's and '70's will continue to have a positive or negative effect on social problems in the near future. The demographic developments we have discussed had varying effects on *public expenditure,* for example. Besides steep increases in expenditure arising from demographic trends (e.g. payments to divorced women), there was also greatly reduced expenditure in such fields as primary and technical education and child protection. The current problems in the labour market are also partly related to the large increase in the number of women seeking work as a result of the trends during the 1960's and '70's, i.e. of the later age of marriage, the later age at which the first child is born, the decreasing number of children etc. On the other hand, it is fortunate that hundreds of thousands fewer young people will have to be found work during the coming years than was originally anticipated.
It is extremely difficult to indicate unambiguously the advantages and disadvantages of the changed demographic situation for many sectors of society. This perhaps also applies to demographers as a group and to demography as a science. However much has been learned from the inaccurate projections of the 1960's and '70's from the scientific and organisational point of view, it has certainly not increased the confidence of the general public in such projections.

Figure 18 – Net migration by direction, by region



*) figures for 1980-82 have been made comparable with those for a five year period

N.B. Unless otherwise stated, all the figures used here have been supplied by the C.B.S. and are derived either from the monthly population statistics or from non-published figures of the Department for Population Statistics.

I.2. Twenty years of physical planning, 1964-1984 *)

Author: J.L.M.K. Kits Nieuwenkamp **)

I.2.1. INTRODUCTION

This article looks back over a period of prosperity and expansion, in which physical planning was also able to prosper and develop. It was the period during which the "grand design" of "integrated" and "comprehensive" planning took form, in which concepts such as sector and facet were worked out, planning bureaux were opened and, because the limits of growth appeared to be coming into view, physical planners were listened to.
But what has been the concrete result of all this?
What has been the outcome of the adoption and implementattion of a policy aimed at realising the best possible mutual adaptation of space and society, in the interests of that society? That, at least, was the definition of physical planning given in 1971, when it was at the height of its vogue, about half way through the period under review.
Mutual adaptation: did space adapt more to society or was it the other way round? What was the outcome of this guiding of a process, as physical planning has also been called?
What follows is an attempt to look back on changes and shifts in emphasis in the legal framework and policy and on their consequences for the actual physical development of the country.

I.2.2. THE LEGAL FRAMEWORK

In 1964 the legal framework was complete after a difficult parliamentary passage. The Physical Planning Act (WRO), which had been approved in 1962, came into force in 1965, together with the Physical Planning Decree, containing the regulations for the Act, and the Transition Act bridging the period to 1970.
In order to understand what follows, it must be remembered that neither the Act nor the Decree contain policy or standards, but "only" confer powers and lay down the procedures to be followed. Policy is laid down in Reports, about which more later.
The difficult parliamentary passage was responsible, among other things, for the adoption of a Transition Act to cover a transitional period of five years. By 1st August 1970 all the old regulations were to have been replaced by new ones. The old land use plans, for example, had to be reinterpreted as development plans and the protected areas, mainly nature reserves, were abolished by being absorbed into the new development plans. This proved to be a very slow process, to such an extent that all the explanatory memoranda to the departmental budget and the annual reports of the National Physical Planning Agency expressed serious unease about the safeguarding of these protected areas in particular. Certain less fortunate trends have indeed emerged as the price for democratisation and decentralisation, the two terms by which the then new WRO may be characterised.

Although changes in procedures and responsibilities do not necessarily entail changes in planning policy, the transition from the old to the new legislation did nevertheless have a considerable influence in practice on the use and arrangement of space. Centralised control at the national level was replaced by democratic decision-making at the provincial and municipal levels, with its attendant disadvantage of fragmentation through self-interest. Against the same background, the Wadden Sea, which had been a nationally administered stretch of water, was divided up later in the 1970's among the provinces and municipalities. This is an example of a political philosophy as a basis for physical planning policy.
It also has to be remembered that, not only the Physical Planning Act (WRO), but also much other legislation, such as the environmental, water control and land consolidation acts, includes provisions which are very relevant to land use planning. The Physical Planning Act is described as an "outline" act, which means that it can be filled out in an ad hoc manner. Much can also be settled outside the act.

A review of this field of organisation and legislation leads to the conclusion that physical planning is really to a considerable extent a form of administration. This is shown, for example, by the allocation plan, which uses land use control to enable important administrative procedures such as expropriation, the granting or refusal of building licences and the laying down of regulations on use to be implemented by appeal to the plan. The allocation plan is a land use and administrative plan at the same time, while in other countries physical planning falls under the responsibility of the Minister of Home Affairs. This view receives support from the fact that policy is set out in political reports, which are ultimately approved in political debating arenas, such as the municipal council, the Provincial States and the national Parliament. It is only then that they are translated into land use plans.
The picture outlined here is not a static one. Since 1964 there have been at least some changes of emphasis. New forms of plan, structure schemes and sketches have arisen outside the legal framework, while the legally sanctioned instrument of the facet plan has remained unused. The original concept of *end-state planning,* a picture of the best imaginable physical development for a particular area, embodied in a land use plan, has been gradually changed into *process planning,* a continuous process of adaptation to changing circumstances, partly as the political opportunity arose. In response to the multi-disciplinary character of physical planning, increasing emphasis was placed on the duality of facet and sector and the concept of dualism was introduced into planning in order to bring a certain measure of order into what are actually the multiple strands of every-day practice. Physical planning attempts to co-ordinate on the grounds that it is concerned with the use of space, and this again is an example of an administrative activity. Coordination requires consultation and discussion, both horizontally, as at the national level, and vertically between the administrative levels. This interplay of endless consultation, which we may call planning by negotiation, forms part of the wider "consultation" or "consensus culture", which is a long-standing tradition in the Netherlands. This widespread custom is very timeconsuming and is indulged at the expense of reaching decisions. Moreover, it almost always leads to a compromise which, although it calms tempers, all too often betrays its origins.

*) See also the leading article in the 1979/80 Bulletin.
**) The author is attached to the National Physical Planning Agency (RPD) in The Hague.

Besides the traditional making of objections and the lodging of appeals, which the Physical Planning Act allows to everyone, whether they have a direct interest or not, and which enable the citizen to express his or her views - retrospectively - there has arisen the practice of prior public participation during the planning phase. The municipality, the province and the state all give the citizen the opportunity to take part in the planning process. A first draft is now submitted to the residents, who can participate, either as individuals or as a group, such as a neighbourhood association or a pressure group, in a phase of plan preparation where it is still possible to make modifications to meet the wishes of the citizens. At the national level the so-called national planning key decision procedure (pkb) has been developed. The most important government reports are first published in draft form, after which the citizen is invited to give his or her opinion on them. The provincial and municipal authorities are also invited to give their views. Only after the results of this participation procedure have been processed does the Cabinet reach a definitive decision, which still has to be submitted to the Second Chamber before it can be adopted as official government policy. It took more than ten years before this practice could be incorporated into the WRO. The Second Chamber gave its approval in June 1984. The First Chamber will have to approve the amendment and the aim is to introduce the amended WRO during the course of 1985.
During this same ten year period the phenomenon of "government by report" arose. It appeared that draft reports were already being accepted as a basis for policy, while, formally, even after a definitive government decision and parliamentary debate, the report was intended to be only an indication of policy.
Just as Article 38 of the WRO empowers the Minister of Housing and Physical Planning to issue a directive about the content of a sub-regional plan and Article 37 enables Deputed States (of a province) to do the same to a municipality in respect of a development or structure plan, so will the Minister have the power to issue directives directly to municipalities, once the proposed amendments have been approved by the First Chamber. This accordingly enables central government to intervene directly in municipal matters, while under the WRO of 1965 this could be done only indirectly through the province. The government reports form the basis for issuing these directives. It is a remarkable fact that, precisely in a period when deregulation, privatisation and decentralisation are more than ever the ideal, a centralistic element is being incorporated into the WRO.
To sum up, it may be stated that certain important shifts in emphasis have occurred within the legal framework and administrative procedures of physical planning and these have helped to determine the face of the Netherlands.

I.2.3. PHYSICAL PLANNING POLICY

Physical planning policy is laid down in political reports, such as the First, Second and Third Reports on Physical Planning, at the national level, complete with structure sketches and schemes. Similar policy reports are published at the provincial and municipal levels, with an increasing degree of

Photo I — A selection of volumes from the ***Third Report on Physical Planning in the Netherlands***

detail. They are given concrete expression in spatial plans, the impact of which is sometimes all too concrete.
The First Report on Physical Planning in the Netherlands was published in 1960. It built on its predecessors, such as the Report on the West and the Remainder of the Netherlands, and provided the main outlines of the spatial problem as a background to the discussions on the Physical Planning Bill. These outlines set out the basic spatial picture of the Netherlands in a realistic manner. The following were the objectives:

a. a "Randstad" (Western Holland conurbation) permanently fragmented by buffer zones, as the vibrant heart of the Netherlands;

b. safeguarding of the "green heart" from further urban encroachment.

c. overspill from the Randstad to be guided outwards, i.e. towards the north and south.

This basic policy underlay all the subsequent reports. From the beginning, safeguarding of open land, at first in the West and, later elsewhere in the densely populated Netherlands, has always been one of the main tenets of spatial policy.
In 1966, however, the Second Report, apart from pushing back the time horizon, introduced some not unimportant fresh accents. Attention was drawn, for example, to the problem of increasing urbanisation. Increasing population, increasing prosperity, increasing mechanisation and enlargement of scale contributed to a growing environmental awareness, of which physical planning was also able to take advantage. To put it more forcibly, physical planners claimed, on the grounds that they were concerned with the use of space, that they were the people to deal with environmental problems. This claim, which was developed during the 1960's and early '70's, led to an attempt to have environmental standards included in development plans and to the idea that environmental impact reports were unnecessary, because this element was already included in spatial plans, particularly in the structure schemes.
Partly in reaction to the traditionally priviliged geographical position of the Western Netherlands and partly as a reac-

tion to the strong growth of the Randstad, there emerged a desire to formulate a policy which would both relieve the West and stimulate the "remainder of the Netherlands" and, particularly, the traditional "problem areas". While maintaining the main lines of the spatial policy, the necessary variation in the residential environment had to be created in order to give the citizen the possibility of choice. The concept of "nucleated dispersal" gained adherents: the desired dispersal should not result in urban sprawl. Further urbanisation was harnessed to the cause of the encouragement of the creation of "city regions".

The Third Report, consisting of the three parts: Orientation Report, Urbanisation Report and Rural Areas Report, and published over the period 1973-1983, also continued to elaborate on the traditional planning themes, with, at most, a somewhat different formulation:

a. balanced dispersal, albeit geographically limited, of population and employment (nucleated dispersal);
b. radiation outwards from the Randstad;
c. retention of the "green heart" and buffer zones within and outside the Randstad;
d. diversity of residential environments.

It is clear that, from a purely spatial and geographical point of view, the territorial form of the Netherlands obviously is and will remain unchanged. Even the Delta Plan and the Zuyder Zee works, which were decided upon for other than physical planning reasons, make little difference to this. And as far as the detailed implementation is concerned, the emphasis lies at the regional and local levels. It is slowly being realised that dispersal policy and development policy are two different things, which may sometimes be in mutual conflict.

It had meanwhile been estimated that the Netherlands would have, not 20 million inhabitants in 2000, but at most 15 million (cf.p.7). Nevertheless, even this smaller number, because of the rise in living standards, would make enormous demands on the available space and hence affect the residential environment. For this reason, the adjustment of numbers has in fact had little effect on planning and policy. Although the objective of achieving a population of some 3 million in the North Netherlands by the famous year 2000 was dropped, dispersal of population and employment to the North is still the aim. In any event, the North must not be allowed to lag still further behind.

The Urbanisation Report spelled out the urban development policy in greater detail, covering such matters as the most desirable choice of urbanisation pattern, including the open centre, stopping the shift of population, feared at that time, to Gelderland and North Brabant, reducing commuting and other travel, abolishing spatial imbalances, the growth town and growth centre policy and an open space structure for the Randstad. The revision of the Structure Sketch in 1983, five years after the passage of the Urbanisation Report through Parliament in 1978, may be taken as a concrete example of process planning (fig. 19). Such a sketch (one is also included in the Rural Areas Report) contains a summary of the spatial trends which the government would like to steer in a particular direction. They are trends which are still operative despite earlier spatial policies and which require to be corrected. The old definition of "physical planning as the guiding of a social process" evidently still prevails. The question incidentally remains, which of the two elements, space and society, most allowed itself to be adapted? The aim of the quinquennial reviews of the structure sketches is to adapt the objectives promptly to changing circumstances. With such a flexible policy the question of the effectiveness of policy planning by directives must again be posed. Is a policy of correction of trend indeed being pursued, are there sufficient policy instruments, is there room for policy and, if so, is it having tangible results?

The complement to the Urbanisation Report is the Rural Areas Report. While urbanisation is very much the "home ground" of the Minister of Housing and Physical Planning, because his remit includes housing as well as land use planning, a considerable part of rural areas policy is the joint responsibility of the Minister of Agriculture and Nature Conservation. The "three green reports", i.e. the National Parks and National Landscape Reports, the Report on the Relationship between Agriculture and Nature and Landscape Conservation, as well as the Wadden Sea Report, played an important part, therefore, in its realisation.

The use of zoning, the designation of certain areas intended for agriculture or nature protection, for example, resulted in a division of the Netherlands which included both areas within the urban sphere of influence as well as those affected by the problem of the small centres. Because of this and as a consequence of the policy relating to open areas and buffer zones, the Urbanisation Report and the Rural Areas Report are closely interrelated. The latter report, however, contains many specific policy elements for which another minister than the planning minister is primarily responsible. The establishment and management of nature reserves and landscape parks, farming, management and expansion of the area of woodland and even the open space structure in part of the Randstad, whether or not linked to open air recreation, are independent sectors. It is precisely because these sectors fall outside the direct responsibility of the Minister of Housing and Physical Planning that the distinction between sector and facet planning and the correct relationship between the two play a relatively larger part with the Rural Areas than in the Urbanisation Report. The latter was more an "in-house" product, while the Rural Areas Report could not have been produced without intensive collaboration with other responsible agencies.

In addition to the succession of physical planning reports, a further category of government reports on spatial matters appeared during the 1970's. These were the structure schemes. They dealt with the medium-term spatial consequences of sector policies. What were the spatial consequences, for example, of the domestic and industrial water supply policy, of the plans for military training grounds, or the waterways, or the main road network? Structure schemes are the instrument of the central government par excellence at the point of intersection of sector and facet policy. Although the sector minister is primarily responsible, the Minister of Housing and Physical Planning is always the second signatory. It is the intention that, as already happens with the government physical planning reports, Article 38 directives can be issued where necessary, on the basis of these schemes, to the provincial authorities and, after approval by both chambers of the States General, to the municipalities, for the amendment of their spatial plans.

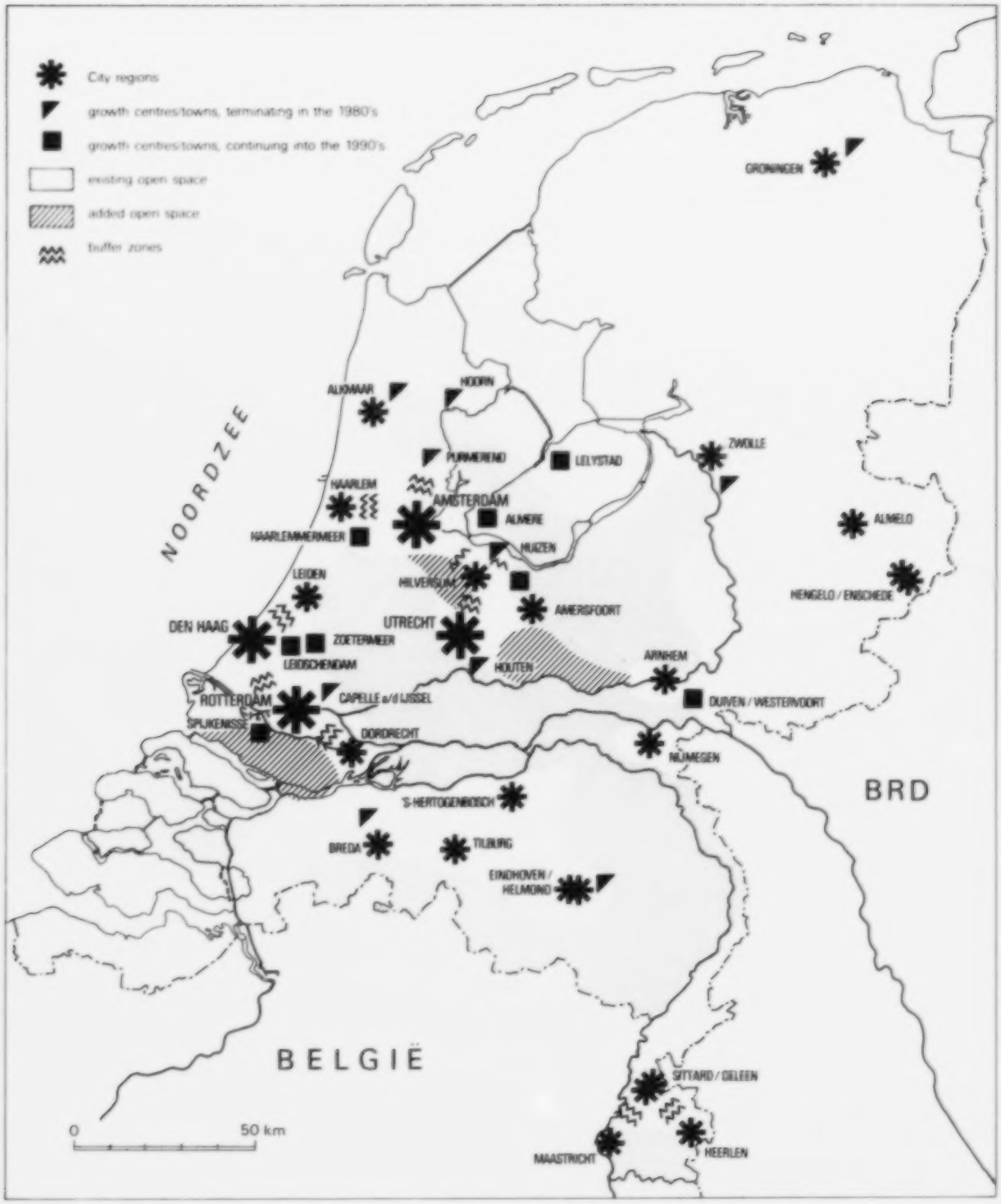


Figure 19 — Structure Sketch for the Urban Areas, 1984

I.2.4. SHIFT OF POLICY

The Annual Report of the National Planning Service for 1966 begins its general review, (Chapter 1) with a newspaper headline: "Dutch territory planned - on paper". This remark was made in response to the publication of the Second Report on Physical Planning in 1966. The Report indicated neatly how the Netherlands should be divided up, used, developed and sometimes even managed. Of the triology: use - development - management, the first element, the designation of a use, was still clearly the most important. Insufficient thought had as yet been given to the necessary instruments, including the financial ones. At first it was even assumed that physical planning did not cost any money, since the implementation, the

design and the management were in other hands and were hence a drain on their budgets. The need, therefore, to convince others to conform with what was spatially desirable, whether or not within the given lesgislative framework, became a pressing one.

The Second Report was more or less a blueprint, which had to be implemented by others. Ideas gradually changed, however, partly under the pressure of constantly rising living standards. Ideas about living changed, mobility increased and, with it, the pressure on the countryside. Because of these rapid changes, the form in which the Second Report was cast, the blueprint, rapidly became obsolete. The need arose for process planning, the flexibility of which made it possible to keep ahead of developments, rather than follow them, so that they could be corrected in time. Being ahead of developments in order to be able to guide them from the spatial standpoint has been the point of departure for physical planning since then. This means, in fact, the formulation of wishes running counter to the economic cycle. In times of prosperity physical planning saw the limits of growth coming into view, while now, during a period of economic standstill, the revised Urbanisation Structure Sketch is urging the maximum use to be made of economic potential and of investments already made. If the Second Report is characterised as a blueprint, it should at the same time be remarked that it was very graphic in character. It presented few or no concrete details, but it did give a more global indication of the optimal spatial development. A filling out of the details at the national level had to await the structure schemes and structure sketches of the 1970's.

Although the character of the reports changed, the policy remained essentially the same. The first part of the Urbanisation Report - the Orientation Report - even stressed that the objectives set out in the Second Report remained in force, although there were changes in emphasis, for example, in the field of:

– Separation-integration

During the 1960's and on into the '70's the emphasis was clearly on the maximum separation of functions, both in town and country. In the towns, neighbourhoods were cleaned up by the removal of factories and workshops. In the countryside, the aim was to obtain areas which were as homogeneous as possible. Now the aim is to allow a certain degree of integration in order to improve the residential environment by means of diversity. Areas which are excessively homogeneous are now considered to be too sterile and insufficiently challenging. They also generate a lot of travel, which is in conflict with the aim of keeping the need for traffic movement at a minimum (fig. 20).

– Dispersal of population and employment

The idea of being able to disperse population as well as employment has been almost abandoned. The Second Report stated it to be desirable that the North should have three million inhabitants in 2000. This would have meant that, from 1966, an average of 20,000 persons per annum would have had to move to the North. If this is compared with the personal consequences of moving only the top Post Office management from The Hague to Groningen at the present time, where it is a matter of 8000 jobs spread over a couple of years, the "wishful" character of the policy becomes clear. The penalties of the Selective Investment Scheme (SIR), devised in

Figure 20 – Main road network, existing and proposed, according to the Second Report on Physical Planning in the Netherlands, 1966 (top), and according to the Structure Scheme for Traffic and Transport, 1977 (bottom).

———— existing roads
- - - - - - - - - - proposed roads

economic activity or at least their spatial consequences, that the Netherlands would present an essentially different picture without it?

The picture of the Netherlands is obviously strongly determined by:

- nature and the physical necessity of erecting defences against it: Zuyder Zee works, Delta Plan, raising of river dikes etc.
- the growth of the population, as a result, first, of a high birth rate and, later, of immigration: housing development, social and cultural facilities;
- the strongly expanding economy: construction and building of all kinds of infrastructure, including the main road network.

Has physical planning had a demonstrable influence on these developments? Has spatial policy been able to have a corrective effect? This same question may incidentally also be asked of environmental policy, which, from physical necessity, has seen a rapid evolution during the past twenty years.

I.2.5.1. The city

A spectacular development have been the growth centres and growth towns, the reception centres for the selective migration of the more well-to-do in search of a house with a garden and, later, for the overspill generated by the urban renewal process. Would there have been more suburbanisation in a climate of free spatial development, or more or less high-rise development?

How strong are prevailing fashions and can physical planning avoid their influence? It is symptomatic, for example, that it was thought during the 1970's that the city had reached the end of its building capacity. Now, according to the draft structure plan, "The City at the Centre", sites have been found in Amsterdam for no less than 40,000 to 50,000 dwellings. This infilling of the existing city will be at the expense of the flow of building and population to the growth centres and towns. This is also reflected in the latest revision of the Urbanisation Structure Sketch. As in the case of Amsterdam and in line with the latest objective of making the best use of existing investment and economic potential, Schiphol is no longer so environmentally reprehensible and objectionable as it has been during the past fifteen years. The vast employment potential of the airport must be exploited to the full. Planning policy has meanwhile steered the population northwards out of the city across the traffic barrier of the North Sea Canal. The result is that expensive bridges and tunnels have to be built, from 1985 Alkmaar and Hoorn will no longer act as reception towns, while like Vleuten-De Meern and the zone along the Hofplein rail line, which was "written off" at an earlier date, the northern part of the Haarlemmermeer and southern Amstelveen will no longer be regarded as part of the central open zone. The principle objective of maintaining an open green heart is therefore subject to attack (fig. 21). The picture is made to appear more favourable on paper by the omission of such places as Gouda, Alphen a/d Rijn and other towns from the structure sketch map. Because these places are not allocated any function, they are hardly shown and the green heart still appears to be an open zone on the map. In reality these places have grown considerably. Finally, there is the new town of Zoetermeer. The distances between the settlements are becoming very small,particularly when the effect is reinforced by high rise buildings. It is fortunate that there is almost no ribbon development in the Netherlands, an example incidentally of a consistently pursued physical planning policy. The question has also to be asked of how open the green heart would be if there had been no restrictive policy and if, in the absence of a growth centre policy, the new development in Purmerend had been built in dispersed form between Haarlem and Hilversum.

Photo III — Recent development in a part of Rotterdam which had remained open since the 1940 bombing. In the foreground, ships in one of the old inner city docks.

I.2.5.2. The countryside

Although it has to be admitted that, as far as the green heart is concerned, space has clearly had to adapt itself more than society, a concrete example of the opposite is perhaps the prevention of the construction of Rijksweg (National Highway) No. 3 from Amsterdam to Rotterdam, across the open central zone. This link, which has been strongly promoted by the Ministry of Transport and Public Works, has always met resistance on physical planning grounds. Postponement leads to abandonment. Without objections from the planning side through the medium of the Structure Scheme for Traffic and Transport, for example, this road would perhaps already have been completed.

Although it is not easy to find examples where planning intervention has had concrete results, the buffer zone policy is one which has not been without positive effect. Strictly speaking, this field of policy, the only one in which physical planning, apart from a budget item for research, has its own budget at the central government level, forms part of the urbanisation policy. Examples of buffer zones are Midden-Delfland, Spaarnwoude (photgraph IV), areas in the Gooi and a projected zone between Arnhem and Nijmegen.

The influence of physical planning policy on development in

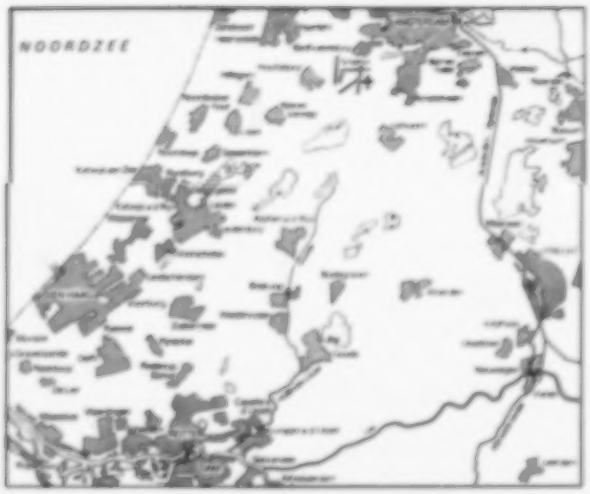


Figure 21 — Urbanisation is particularly far advanced in the western part of the "Green Heart" of the Randstad (the map shows all settlements with more than 10,000 inhabitants in the early 1980's).

the Netherlands can also be seen from the use of the power of the Minister of Housing and Physical Planning and the provincial authorities to issue directives. Viewed nationally, however, such a directive usually relates to a relatively limited project, irrespective of its local or regional importance. A few examples of its sparing use are the refusal to allow building development in a river polder near Nijmegen (1970) and in the dunes near Zandvoort (1975), and the ban on excavation and designation of the eastern Leuwersmeer as a military training ground (1979).

Physical planning policy also finds concrete expression through Article 65 of the WRO, by which projects which have to be implemented speedily in the public interest are made the subject of a simplified procedure. Lastly, there are the appeal decisions taken by the Crown, which either definitively refuse a particular development or specifically allow it. All these procedures come at the end of the process of policy formulation, i.e. when an already adopted policy is opposed or contested. The working out of the policy and, more particularly, its concrete realisation, take place at the provincial and municipal levels. The actual design and development, which often determine the ultimate quality of the living environment, are largely a matter for regional and local government. Execution, construction and management equally help to determine whether a project should be permitted. A high quality execution is likely to make a project more acceptable. It fashions space, as it were.

Many other subjects can be mentioned at this regional and local level which help to shape the landscape. Examples would be the so-called small centres policy or the relationship and interaction between agriculture and nature conservation. In the first instance, these are policies for which ministers other than the Minister of Housing, Physical Planning and Environment are responsible. Nevertheless, planners identified the problems in these sectors at an early stage and accepted the responsibility for co-ordination.

Neither is the question of whether or not to reclaim the Markerwaard purely a matter of physical planning policy, although it should be so more than many other subjects. This project is clearly of supraregional importance, in which national physical planning policy plays a part, but it is in the first place a matter for the Ministry of Transport and Public Works. In brief, physical planning policy tries to engender understanding for the element of space, but physical planning as such is highly dependent on the collaboration of others, particularly from the various sectors.

I.2.6. CONCLUSION

Looking back on twenty years of physical planning, we may conclude that, after an interval in which the policy was one of dispersal, the emphasis is again on concentration, that the attainment of goals remains highly dependent on the collaboration of the individual sectors and that the content of the policy is ultimately still very much determined by the general social climate. Although the claims on space are used as a ground for co-ordination, space is not an element which determines policy in its own right. Physical planning is the guiding of the social process and its aim is "to make the best of" the available space. Physical planning has evolved from technocratic, voluntary planning (ready-made blueprint as with the original National Plan and, to some extent, the Second Report) to a trading-off process in horizontal and vertical consultation and the balancing out of political criteria.

As a result, physical planning is perhaps primarily an instrument for giving everyone a voice (cf. the Broad Social Discussion on Nuclear Energy) rather than a means of achieving what is objectively the best result.

After the attempts to have it accorded the status of integral planning, physical planning has been reduced to somewhat more realistic proportions by the economic recession and the rise of environmental policy. It may now be said to have become less of a facet of policy.

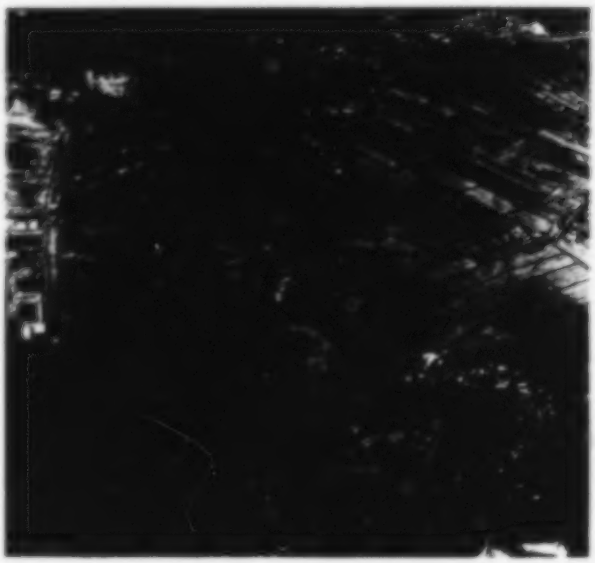


Photo IV — Part of the Spaarnwoude 'buffer zone', looking north. The area is being laid out almost entirely for water sports and other kinds of open air recreation. Part of the industrial zone on the east side of Haarlem is just visible on the left; the port and industrial zone of Amsterdam commences a little over 5 kilometres to the east of the right hand edge of the photograph.

I.3. Agriculture and Horticulture, 1964-1984: the age of specialisation

*Author: A. van Dijk *)*

I.3.1. INTRODUCTION

Towards the end of the 1950's a farmer's son from the grassland area to the west of Utrecht described the work on his father's farm. Traction there was provided by a 15-year old horse. But some mechanisation had already made its appearance. They had a motor mower. This machine still had to be pulled by the horse, but yet ... With it a skilled operator could mow half a hectare in an hour. A worker with a scythe needed a very long working day to cut that area of grass.
On this farm there were 25 milch cows, ten sows, one store pig, forty bacon pigs, forty chickens and a horse. According to the criteria established by agricultural researchers for the various farming activities, nearly 11,000 hours of labour per annum were required for the care of the animals, milking, maintaining the grassland, haymaking and making silage.
In an essay which the 16-year old son wrote about the work on the farm, he noted: "If we calculate that each adult has to work for 3,200 hours per annum, there should be work for three people on our farm. It is well known, however, that many more hours have to be worked per annum on the farm, and particularly on the family farm. In our case, with a labour force of 2.5 people, i.e. my father, the farm hand and myself as the half (he was still at the agricultural college and worked only part-time), the total number of hours would be 4,284 per annum. This coincides closely with reality and works out at an 80-hour working week. The situation has changed, however, because the farm hand has gone to work in a factory. We have been able to compensate for this by some mechanisation, by working as efficiently as possible and by calling in the help of my younger brothers".

I.3.2. EMPLOYEES LEAVE

The writer sets out in a few sentences what was then a general phenomenon in agriculture and horticulture: workers who did not form part of the farmer or grower's family often went to find a living outside the agricultural sector. The rise of industry attracted many away from the hard labour and irregular hours and exposure to wind and weather associated with work on the land. In industry one had a roof over one's head, regular hours and, a better wage. The work itself was also usually much lighter.
The human labour which disappeared was replaced by machines. In some instances an appeal was made more often to members of the family other than the father, mother or oldest son and future successor. These other members of the family did not always feel themselves called upon to respond to the appeal. They were also aware of the attractive new possibilities for making a living elsewhere in the community and found work off the farm. The attraction of working and living outside agriculture even became so great that many farmers and growers were left without a successor.

*) The author is attached to the Agriculture and Horticulture Public Relations Foundation in The Hague.

Dutch agriculture (and by agriculture in what follows is meant the whole field of agricultural production) had already sailed into stormy waters during the last quarter of the last century and it has never really been calm in the countryside since then. And a situation rapidly arose after the Second World War which is well described by the title of a 1963 study of the Institute of Agriculture Economics (LEI): "Agriculture and countryside in the rapids". There has been no period in history during which so many revolutions occurred in the field of agriculture in so short a time as in the years following the liberation. The rapids described then continue to boil. The stretch of troubled water is longer than many people in 1963 foresaw.

I.3.3. ECONOMIES OF SCALE

The first years after the Second World War were characterised, as far as agriculture and horticulture were concerned, more by efforts to raise production per man than to raise production per hectare and per beast. As a consequence, the number of workers was reduced, holdings were enlarged and a number of external production conditions were improved, partly through land consolidation (fig. 22). A high proportion of cultivated land in the Netherlands was turned over, as the saying was. The picture of the countryside changed. Economies of scale occurred. The exodus of farmworkers and farmers' sons was followed in the 1960's and '70's by the exodus of farmers unable to continue. The farms of those who left were amalgamated with those who stayed, so that the remaining farms were enlarged.
Table 1 gives a picture of changes in size of holding since 1965.

Table 1 — Holdings by size and main farming type

	Arable farmers/Livestock farmers (no. of holdings x 1000)				
ha. of cultivated land	**1965***	**1970***	**1975**	**1980**	**1983**
up to 5	26	16	14	13	11
5 to 10	45	31	23	18	15
10 to 20	53	49	40	33	30
20 to 50	25	27	29	30	30
50 and over	2	2	3	4	4
TOTAL	**153**	**126**	**109**	**97**	**90**

	Market gardeners (no. of holdings x 1000)				
up to 5	32	25	21	18	17
5 to 10	3	3	3	3	3
10 to 20		1.2	1.4	1.9	1.7
20 to 50	1.1	0.3	0.4	0.4	0.4
50 and over		0.03	0.03	0.02	0.04
TOTAL	**36**	**29**	**26**	**23**	**22**

* inc. 10 sbu or less (sbu = standard business unit, i.e. a unit of standardised added value, e.g. 0.4 ha. of cereals. Since 1975 only holdings larger than 10 sbu have been counted).

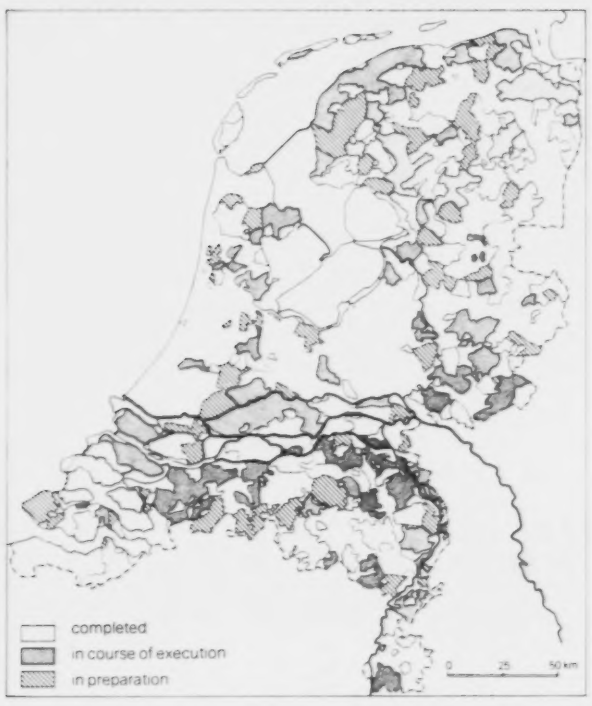


Figure 22 – State of land consolidation projects in the Netherlands at 1st January 1984

Table 2 shows the changes in the numbers of workers. The figures for the different years are not always comparable. In 1954 the statisticians counted "permanent employees", the arrangement used was 15 or more hours of regular work per week, and in 1983 the minimum number of hours was reduced to 10.

Table 2 – Labour Force according to the Agricultural Censuses

		1964 permanent employees	1971 15 hours and over	1976 15 hours and over	1981 15 hours and over	1983 10 hours and over
Family labour		348,818	267,421	242,785	215,336	224,253
Farmer	m	209,975	166,864	149,949	136,242	138,984
	f	6,668	2,414	2,417	2,818	3,336
Spouse	m	0	141	125	272	456
	f	0	62,948	66,047	58,149	58,602
Children	m	48,685	25,491	18,059	13,684	17,200
	f	13,091	3,303	1,699	1,063	1,443
Other	m	9,697	4,900	3,449	2,398	3,461
Relatives	f	60,762	1,310	1,040	710	771
Non-fam labour	m	53,495	35,299	33,784	31,879	32,635
	f	1,793	1,827	2,417	4,799	5,703
TOTAL	**m**	**321,852**	**232,695**	**205,366**	**184,475**	**192,736**
	f	**82,314**	**71,852**	**73,620**	**67,539**	**69,855**

I.3.4. PROSPERITY IN THE COUNTRYSIDE

The exodus from agriculture has not resulted in the emptying of the countryside. On the contrary, a change has occurred in the countryside which has enabled the regional economy to proposer as part of the wider Dutch economy.

Roads, schools, cultural facilities, better medical facilities have helped to attract industries and services to set up in the regions. These have provided employment for many people who had previously been forced to turn to agriculture for a livelihood. In this way prosperity has reached the countryside. The developments in agriculture cannot be viewed separately from what happened in other parts of society. Prof. A. Maris, who was Director of the LEI at that time, said in 1980: "Rationalisation of agriculture is the beginning of all prosperity, of everything that rises above the bare subsistence minimum. The technical progress of agriculture stands at the cradle of economic growth."
The economies of scale which occurred in agriculture were not restricted to the enlargement of the area of land available to each holding. Land is a scarce resource in the Netherlands. It has been a long time since there was any waste land left to reclaim. During the present century expansion of the area of agricultural land has been brought about by reclamation from the sea. The great Lake IJssel polders were created, but the amount of land which was gained as a result was scarcely sufficient to make good the loss of land from the development of industrial estates, recreational areas, residential areas and roads. Moreover, the individual farmer stands to gain little if new land is reclaimed several tens of kilometres away from his undersized farm. He can try to move there, but if that is not possible, he has to try to find a different solution.

Many small farms, situated mainly on the sandlands in the east and south of the Netherlands, achieved economies of scale by keeping animals in large numbers unrelated to the amount of fodder their own land could provide. Fodder was bought in. This is how intensive livestock farming began (photograph V). The mixed feeds industry grew up. This industry makes feeds adapted to each kind of animal and uses mainly imported constituents. A farmer who takes up intensive livestock farming specialises in the keeping of one kind of animal, be it pigs, calves, laying hens or table poultry. The art is to keep as many animals on the smallest possible area with a minimum of labour.

I.3.5. THE END OF MIXED FARMING

This development marked the end of mixed farming, in which different kinds of animals were kept and some arable farming was practised. The era of specialisation had begun. Agricultural circles referred to unmixing. The farmer started to concentrate on one or two branches of farming. This phenomenon could be observed not only in intensive pig, calf and poultry farming, but also in dairying, arable farming and horticulture.
The figures of the numbers of cattle, pigs and poultry in Table 3 show clearly how steeply both the total number of animals and the number of animals per holding have increased. The number of holdings has constantly declined under the pressure of economic circumstances, but both the number of animals per holding and the total animal population has increased considerably. Every effort has been made to increase production per worker. Lovers of statistics should note that in 1964 and 1970 – as stated – holdings of ten standard business units (sbu's) or less were still included, while they are excluded from the figures for later years.

I.4.5.1. From expansion to selective growth and restructuring

There is little latitude for industrial policy in a highly open economy, which forms part of the European Community and has a well-developed, internationally oriented industrial structure. In the phase of rapid expansion of the Dutch economy, between 1960 and 1970, the country's international position was fully exploited, the government withdrew increasingly from economic life and the high wage levels which had been achieved reflected the specific Dutch position in the midst of other industrial countries.
The rapid expansion gave rise to environmental problems, particularly in and around the seaport regions. Physical planning, as a government activity, faced increasing criticism. Economic policy in the 1970's took the form of a selective growth policy. Regional policy had also meanwhile widened its scope beyond regional industrialisation. From the end of the 1950's a spatial dispersal policy was proposed which was intended to be closely integrated with the regional economic policy. From 1972 the integral development policy for the Northern Netherlands and South Limburg was pursued considerably more vigourously. Regional policy now covered a much wider field than in the 1950's. Restrictions on economic expansion were announced, however, for the Western and Central Netherlands. The Selective Investment Regulations, which were in force between 1975 and 1983, were intended to discourage investments through the medium of compulsory notifications, levies and (for Rijnmond) licences, and a start was made on relocating government departments from the Hague conurbation to towns in the Northern Netherlands and South Limburg.
The economic tide had meanwhile turned. Restructuring was the new watchword. In certain industries there had already been a considerable fall in demand from the mid-1960's. The coal mines were closed, the shipbuilding and engineering industries received considerable government support and measures were taken to counter what was regarded as the unavoidable decline in the textile and clothing industries. The common characteristic of these industries was that their location pattern showed a strong regional concentration. Regional economic policy had to do more than create jobs in areas lacking an industrial tradition; it also had to create replacement jobs in restructuring regions. In the 1970's regional policy included the twin aims of selective growth and restructuring.

I.4.5.2. Further consideration of industrial structure and the narrow margins for regional industrial policy

The economic recession became more severe during the second half of the 1970's and there were signs that the Netherlands would be less able to withstand this setback than a number of other industrial countries. The Scientific Council for Government Policy (WRR) concluded in its study, the 'Place and Future of Dutch Industry' of 1980, that the profile of Dutch industry was too narrow and one-sided. Wage costs per unit product were too high, exports were over-concentrated on bulk commodities (e.g. chemicals) and orientated too exclusively towards the European market. In research and training there was a gap relative to Japan, the U.S.A. and West Germany, while the new industrial countries (including the OPEC countries) would increasingly compete with the Netherlands in respect of bulk commodities, and the developing countries might capture the market for labour-intensive products.
The study recommended that production should concentrate on high value rather than bulk chemicals (cf. Switzerland), that the clothing, textile and footwear industries should be revitalised by turning to high quality products, and that there should be import substitution in the capital goods sector (engineering, electronics).

These recommendations for a well-directed restructuring policy were intended to put an end to the defensive industrial policy pursued in the 1960's and '70's, when a great deal of ad hoc support was given to individual firms. The Dutch Restructuring Company (NEHEM) was forced to limit itself to administering the last rites to industries which were in the final phase of the production cycle. By providing risk capital, the recently formed Industrial Projects Company (MIP) has gone more or less on the offensive. The Investment Accounts Act indicated that firmer support was felt to be needed around 1980 for investment projects. A plea has been made recently for this measure to be abolished, while the special regional supplement has already been withdrawn, partly in response to EEC pressure. Reduction of the social and fiscal burdens on industry is regarded as a better approach.

These generic measures are balanced by specific ones directed at particular sectors and regions. The WRR report recommended this approach with selective intervention under supervision of a government committee to produce what would be regarded as a desirable industrial structure. This technocratic approach has proved not to be feasible under Dutch conditions, although pleas have been made from several sides for a project-orientated approach, fitting within a "plan" with a warning function and providing room for negotiations between government, employers and employees. Two successive Industrial Policy Committees, under the chairmanship of the former managing director of Shell, Mr. Wagner, have followed an even more pragmatic course. For example, a review was recently given of promising industries offering scope for innovation, in which risk capital might be invested and reserarch activities concentrated.
Regional policy stands at the parting of the ways. For thirty years its central objective has been to support problem regions. Since 1981 there has been a second objective: to maximise the contribution of the regions to the national economy. For this purpose the Randstad must also be integrated into the regional policy, the more so now that the major cities are now confronted with considerable unemployment. By making the problem of dividing the national cake the central issue, the potential of the regions for economic growth has been overlooked. Here, too, selection and restructuring of economic activities have been the dominant consideration and now more attention is being paid to the conditions for the development of technologically advanced industries, including and particularly those in the Randstad. Regional development companies have hitherto been permitted only for the historical problem regions and have usually shown a defensive rather than an aggressive orientation. It is to be hoped that the new regional policy (1985-1989) will give more consideration to support for promising projects, including those in the Randstad, in temporary need of additional risk capital.

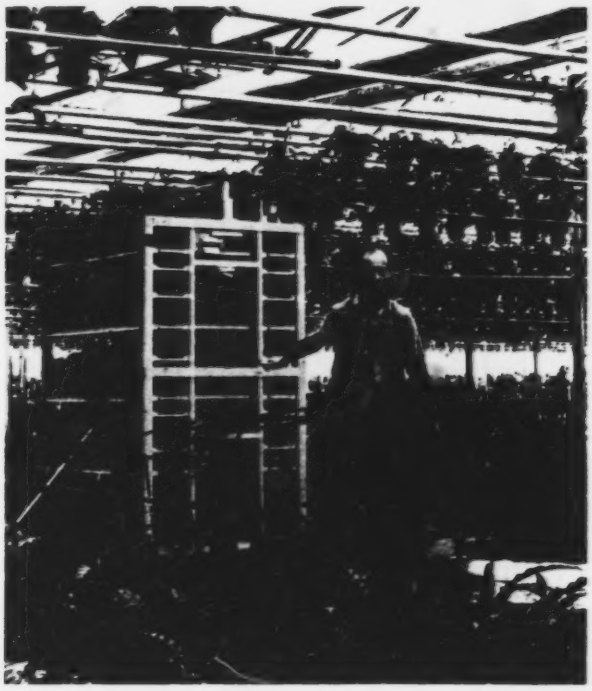


Photo VI — Growing pot plants under glass

pieces of rock wool standing on the plastic used to cover the soil. Water and nutrients are drip fed to the plants via irrigation tubes. The volume and frequency of the dosage is controlled by the computer.

In dairy farming the cowshed in wich the cows are tied up in their regular place during the winter, and which has a drain behind them to receive droppings, has been replaced on thousands of farms by a modern type of shed. This is the cubicle shed, where each animal has its own cubicle and is otherwise free to exercise on a slatted floor. Their dung falls through the floor into a cellar which is periodically emptied. The cows' exercise area is bounded by a feeding passage into which the farmer can bring the feed and distribute it along the feeding rack, where the cows come to eat it. At milking time the cows can enter the walk-through milking shed from the cubicle shed (photograph VII). There they are milked by machine in groups a few at a time. The milk is collected in a cooling tank housed in a separate shed. A tanker comes a few times a week to pick up the milk and take it to the dairy.
In arable farming the cultivation of the land, the care of the crops, the harvesting and the storage have been highly mechanised. This is particularly the case with beet cultivation, which previously made heavy demands on manpower. Labour-saving has been achieved, for example, by developing a single-germ seed which is injected into the ground with a precision seed drill at intervals which give each beet the optimum development chanches. At harvest time gigantic beet harvesters ride over the land, beheading six rows of beets simultaneously, whisking the beets out of the ground, beating the soil off them and depositing them in an accompanying wagon. At the same time, the heads and tops are chopped fine for being ploughed into the ground as green manure.

The attention which was paid in the early 1960's to increasing production per worker has gradually shifted somewhat and more attention is now being paid to raising production per animal and per hectare. This is largely being done through a deliberate animal and plant breeding policy. The figures of milk and egg production and of the average yield per hectare of certain arable crops given below clearly reflect this aspect of the productivity increase in agriculture.

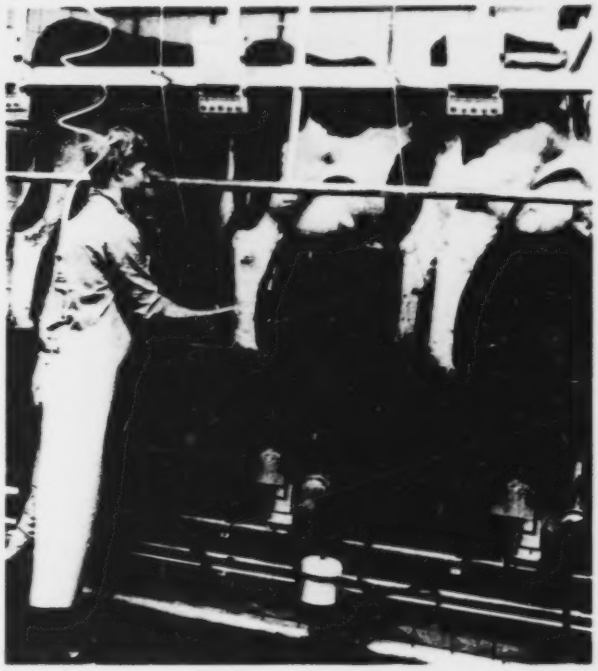


Photo VII — Machine milking in a milking parlour

Table 6 — Average yield per hectare of certain arable crops (x 100 kg)

Period	winter wheat	summer wheat	winter barley	summer barley	oats	rye	eating potatoes (tons)	industr. potatoes (tons)	sugar beet (tons)
1961/65	46	41	38	40	38	29	30	30	42
1966/70	47	39	39	37	39	31	34.5	33.5	47
1971/75	52	43	44	40	46	33	36.7	37	45.8
1976/80	61	47	52	45	49	37	35.2	35.2	47
1983	71	48	55	45	45	39	34.1	31.5	46.6

Table 7 — Milk Production

	Total (x 1,000 tons)	per cow (in kg)
1964	6,971	4,130
1970	8,523	4,390
1975	10,286	4,650
1980	11,844	5,080
1983	13,221*	5,290*

*) provisional

Table 8 — Egg Production (for consumption)

	Total (millions)	per bird per annum
1964	4,862	205
1970	4,121	227
1975	4,765	241
1980	8,264	261
1983	9,819	272

I.3.7. PROBLEMS

These changes have not all gone smoothly. They have also caused problems. The large numbers of animals produce a great quantity of manure. In certain areas more manure is produced than can be used on the land. Efficient ways have to be found to transport it to areas with a manure shortage. The chemical protection of plants has also caused problems during the past twenty years. Chemicals seemed at first to offer a solution for the protection of crops and animals against pests and diseases. The disadvantages which they proved to possess led to the prohibition of a number of those in common use, such as chlorinated hydrocarbons. They have been replaced by chemicals with a more limited effect, which produce less risk to the environment.

The rise in energy prices also increased the costs of farmers and growers. The growers who switched from oil to natural gas for the heating of their greenhouses have had to endure a tremendous increase in the price during the past few years and many have gone bankrupt as a result. The struggle to keep energy costs down, however, has also resulted in the introduction of new techniques in the greenhouses. It has also encouraged the breeding of plant races which produce good yields with less heat.

I.3.8. STILL FAMILY HOLDINGS

Farmers and growers, farmers' and growers' wives, have constantly to adapt themselves to new demands. Both consumers and conservationists keep a close watch on the developments in farming and horticulture.

The people in these industries take this into account. Their enterprises have become expensive production concerns in which large sums are invested. In total they produce a range of commodities which are sold at home and abroad, thus making a considerable contribution to the economy.

They have remained family holdings, however. The farmer and his family are the main providers of labour and risk capital. The 16-year old farmer's son at the beginning of this tale has meanwhile succeeded his father. Together with his wife he has succeeded in staying afloat in the rapids.

I.4. From industrial emancipation to restructuring; The Netherlands as an industrial country during the past two decades

Author: M. de Smidt *

I.4.1. INTRODUCTION

During the economic crisis around 1980 people began looking back rather nostalgically at the impressive industrialisation of the 1950's. Dutch society worked in harmoniously at making good the industrial leeway relative to the neighbouring countries. Nevertheless one should beware of creating a myth. The Netherlands had become an industrial country much earlier. This was in the 1890's, although it was much later than in the other West European countries and the Netherlands did not possess any iron and steel industry, which was the basic industry par excellence. The rapid industrialisation during the 1950's undoubtedly produced many jobs, even, and particularly, in the development areas. The relatively low level of wages was attractive to industrialists and certainly to foreign firms. The Nobel Prize winner Jan Tinbergen, warned, however, against too heavy a reliance on the low value, labour intensive activities which flowed from this. The consequences later made themselves felt. In about 1963 wage explosions occurred which brought about a rapid adjustment to West European wage levels and were to lead unavoidably to industrial restructuring. The supply of cheap labour meanwhile rapidly dried up and foreign workers had to be attracted. Dutch industrialisation had to follow a new course. The 1960's were a period of industrial emancipation, but also saw the first signs of industrial restructuring. This latter phenomenon, however, was mainly a characteristic of the period of economic crisis beginning in 1972, which was further aggravated by the energy crises of 1973 and 1979. The Netherlands had a bigger share than many other countries in the tremendous economic expansion of the 1960's, which was reflected, for example, in the large-scale development of seaport industrial complexes, but the country also proved to be more sensitive to setbacks in the world economy. The very open character of the economy of the Benelux countries was further strengthened as a concomitant of European integration. The Netherlands became a leader in the new basic industry of petrochemicals and its industrial structure consequently became more capital and energy-intensive.

Industry in the Netherlands has undergone a transformation during the last two decades. Attention will be directed first at the international context, the position of the Netherlands in the international division of labour. We shall then examine changes in industrial structure and, finally, the regional picture.

Regional industrialisation has already formed a part of economic policy for 35 years and was dominated in the 1970's by the consequences of selective growth and restructuring as an integral part of the spatial dispersal and development policy. After first concentrating on analysis, we shall pay due attention to policy at the end of the chapter.

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I.4.2. INTERNATIONAL CONTEXT

The Netherlands forms part of the European Community, the largest trading block in the world. The Low Countries have for centuries occupied a special geographical position as the gateway to Europe. This special character is shown by a comparison with the larger neighbouring countries. It should not be forgotten that large industrial countries possess a big home market and also enjoy economies of scale in respect of production factors. A comparison of the industrial structure of the Netherlands with that of certain other small industrial countries will provide a better perspective in which to view the characteristic industrial pattern of that country. The room for manoeuvre of Dutch industrial policy is limited both by European integration, which encourages the international division of labour between the ten countries and imposes restrictions on certain sectors (e.g. the steel industry), and by the internationalisation of industry, which is reflected in the growing importance of the multinational firms. Each of these aspects will now be considered separately.

I.4.2.1. Two new stimuli: seaport industrialisation and exploitation of natural gas

The Netherlands benefitted more than any other West European country from the economic expansion of the 1960's. Industrial production increased by 75% between 1963 and 1970. In other European countries the increase was about 50% and in the United Kingdom "only" 25% (fig. 23). This growth was seriously slowed down after the first energy crisis and, after 1980, the Netherlands, together with the United Kingdom and more so than Belgium, was the country to suffer most seriously from the consequences of the international economic crisis. For the first time since the war industrial production even declined, not only in the Netherlands, but in the E.E.C. The Netherlands had to exchange its position at the head of the European team for one at the tail. The international segment of the Dutch economy has recently been benefitting from the world economic recovery - the signs are visible in the port of Rotterdam and at Amsterdam airport - but the domestic economy continues to stagnate.

How can the characteristics of a country's industrialization be defined? The traditional answer is the level of production of the basic industry. No matter what other, more complex definitions are given, it cannot be denied that it is precisely in this field that exciting structural and locational developments have occurred during the past twenty years. The Netherlands was, in fact, almost completely lacking in basic industry before then.

During the 1960's Hoogovens (the iron and steel works) at IJmuiden received a fresh boost, as indeed did Zelzate near Ghent in Belgium and the iron and steel works on the French coast.

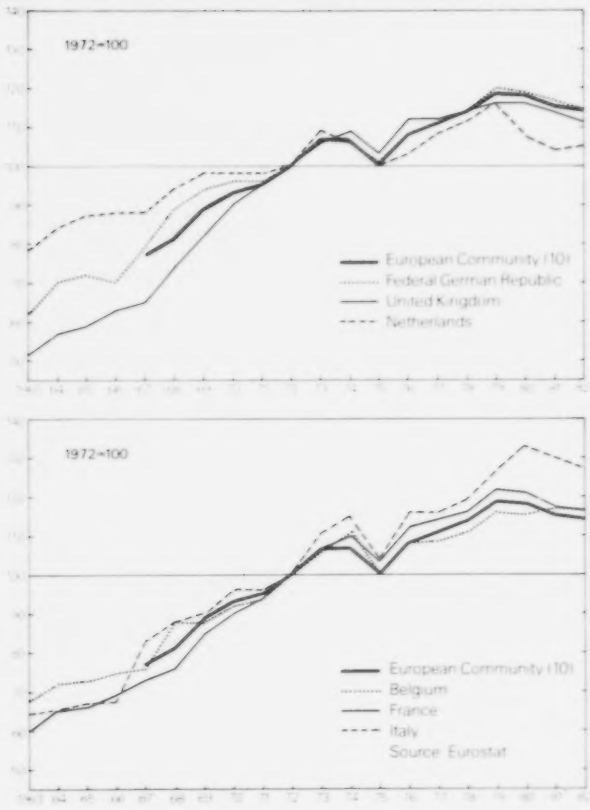


Figure 23 — Industrial production in the countries of the European Community, 1963 - 82
(statistics of volume, 1972 = 100)

There was a shift of the basic metallurgical industry to the coast, partly in response to a stronger overseas orientation for the import of iron ore and to technological developments (less use of coking coal, use of bulk carriers). The Netherlands and Italy succeeding in winning a modest position as "newcomers" in the European market and Belgium strengthened its share (Table 9).

Table 9 — Indicators for basic industry in the countries of the European Community

	Raw steel production (x million tons)		
	1963	1972	1983
Belg/Lux	11.6	21.4	13.4
F.R. of Germany	31.6	49.5	35.9
France	17.6	25.3	18.4
Italy	10.2	21.0	24.0
Netherlands	2.4	5.6	4.4
E.E.C. 6	73.4	[illegible]2.8	96.1
U.K.	22.9	2[illegible]6	13.7
E.E.C. 10	96.7	139.6	111.3

	Petroleum products (x million tons)		
	1963	1972	1983
Belg/Lux	11.4	34.5	23.4
F.R. of Germany	43.5	102.8	85.5
France	42.4	110.5	77.3
Italy	45.5	124.3	80.7
Netherlands	22.9	66.1	36.3
E.E.C. 6	165.8	428.2	303.2
U.K.	49.6	99.4	68.0
E.E.C. 10	220.0	564.4	391.8

Source: Eurostat

Even at the end of the 1960's consideration was being given to the establishment of a large German iron and steel company on the Maasvlakte (the most westerly extension of the port of Rotterdam), although this was not realised because of opposition from environmental groups. The onset of the economic crisis put an end to this expansion in all the European countries and the level of production in 1982 was only a little above that of 1963 in all except the two "newcomers" (the Netherlands and Italy). In the United Kingdom there was even a drastic reduction and elsewhere, too, the consequences of the agreements to limit steel production capacity within the European Community have left their mark. The so-called new industrial countries will become important competitors in the near future.

A second, more spectacular, indicator of industrial development is the new basic industry of oil refining and the related petrochemical industry. The Netherlands led here from the beginning with a production level in 1963 which was half that of Europe's "big four" and double that of Belgium (Table 9). The port of Rotterdam was the focal point of oil refining and chemical processing, as well as being the node of pipeline networks for petroleum and numerous petroleum products (photograph VIII).

During the next ten years the petrochemical industry expanded more rapidly in the Netherlands and Belgium than in the large neighbour countries. A dramatic reversal occurred in the mid-70's as a result of the combined effects of economic recession and the energy crisis. The blow fell more heavily in the Netherlands than elsewhere; the level of production in 1982 was scarcely more than half of what it was on the eve of the energy crisis. The competition in heavy chemicals, in which the Netherlands specialises, is greater than that in high value endproducts. Such a specialisation is characteristic of a seaport. Farther inland in Europe, pipelines have opened up new possibilities for the petrochemical industry, closer to the market. The oil-producing countries are themselves engaging increasingly in oil refining and the production of petrochemicals.

Thanks to its location and infrastructure, the Netherlands has gained a strong position for itself in the raw materials-oriented stage of industrial production. Coal, the old basis for industrialisation, has played a modest role in the Netherlands for only a relatively short time, in fact, for only 75 years. The last coal mine had just been closed when the energy crisis began. Coal had been superseded by oil as an energy source. Just before the plan for closing the coal mines was published in 1965, it became known that the Netherlands possessed an enormous reserve of natural gas in Groningen, which was later supplemented by finds in the continental shelf. The level of dependency in respect of energy supplies has ranged between 40 and 85% in most Western European countries during the past two decades, except in the United Kingdom (North Sea oil and gas) and the Netherlands, which even had a surplus. A comparison between the Netherlands and the Europe of the Ten shows that natural gas plays a major role in the Netherlands and that petroleum continues to be of importance, even though coal is showing a marked recovery, however modest (Table 10). Since the energy crisis, oil has been losing ground in Europe (relatively) to nuclear energy and natural gas, yet, contrary to what was originally expected, coal has remained an important energy source. The Netherlands is also pursuing a different policy, for example, by not choosing nuclear power for the present as an energy source (in France it accounts for 17% of energy supplies).

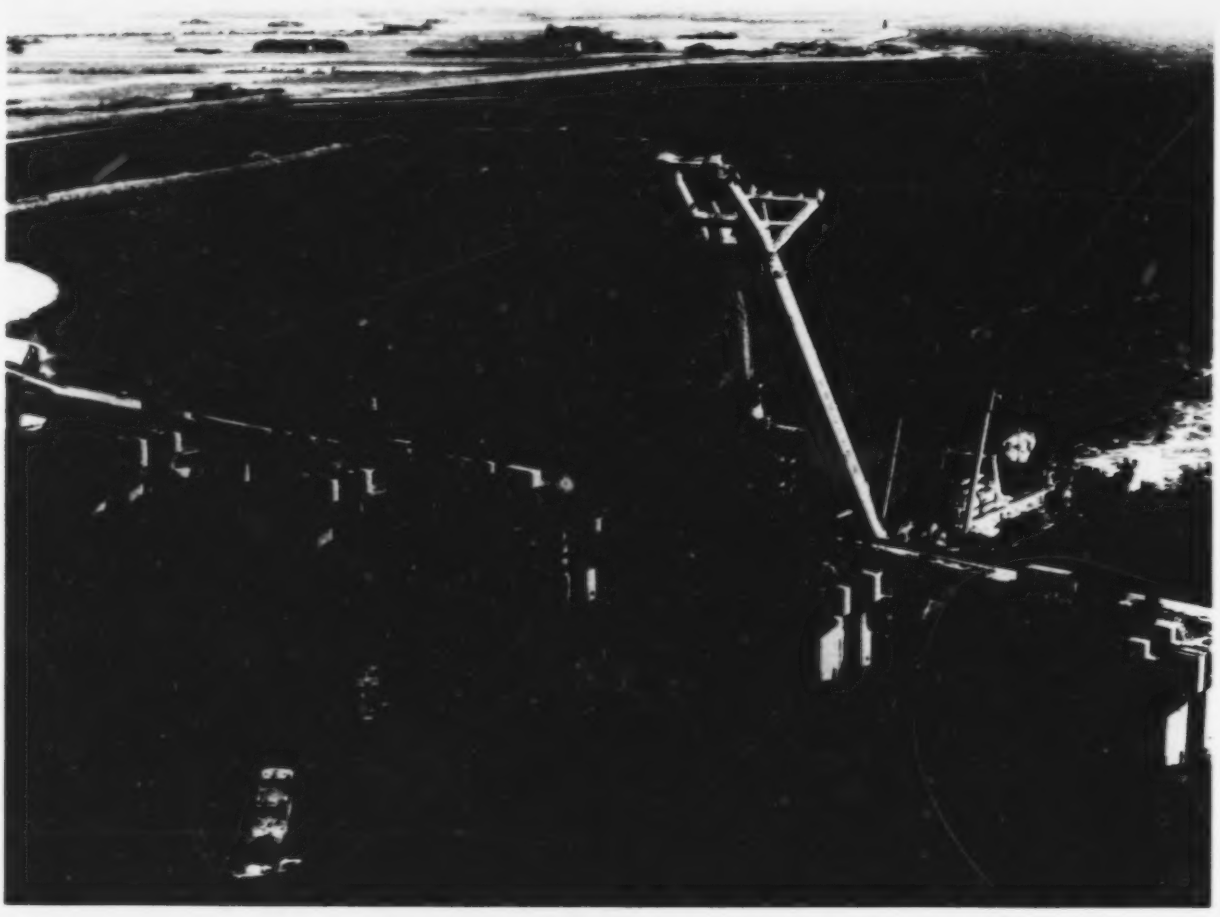


Photo XI - Hanging in one of the steel gates in the storm surge barrier in the Eastern Scheldt. Five of the 64 piers placed during the past year are visible in the photograph. Two gates have already been mounted on the left.

tury, had a population of 33,000 on 1st January. Zeewolde, which is a service centre for the agricultural part of the polder, as well as being a water sports centre, has a maximum planned population of 8,000.

In the autumn of 1983 a new road bridge was opened between Southern Flevoland and the old land (3 in fig. 32). Somewhat farther to the west work is processing on the construction of the Flevoland railway bridge, which will lie alongside the existing Holland (road) Bridge (4 in fig. 32). The railway line will be opened to Almere in 1987 and to Lelystad in 1988. Work has begun on the building of the main station in the centre of the latter city (photograph XII).

The argument about whether or not to reclaim the final, Markerwaard, polder has still not been concluded. During the past year the financial aspects formed an important part of the discussion. A group of private investors from the polders took the initiative in proposing to finance the reclamation themselves in the absence of public money. It is still not clear, however, if and to what extent the government is prepared to support this plan.

III.3. Physical planning

Five years after the publication of the *Structure Sketch for Urbanisation* in 1978 a revised version of this structure sketch was published in 1983 as a policy proposal. The government decision on this document was published in September 1984. This structure sketch, now known as the *Structure Sketch for the Urban Areas*, is the detailed working out of the *Urbanisation Report*, which was published in 1977 and formed, in its turn, part of the *Third Report on Physical Planning in the Netherlands* (see, for example, IDG Bulletin, 1979/80, pp. 20-28, IDG Bulletin, 1982/83, p. 49 and Section I.2. of the present Bulletin).

The reasons for the policy changes include the economic recession with the consequent need for restrictions on government expenditure. But changes in planning thought and new social developments have also played a part. The principle announced in the Urbanisation Report of 1977 of preventing the spread of development into areas of open land remains in force, but whereas the solution was mainly sought then in the concentration of growth into a number of growth towns and centres outside the existing conurbations, the accent now

Photo VIII — Storage and refining of petroleum around the Botlekhaven, west of Rotterdam, looking north-east. Background, right, the Shell refinery and chemical plant, the oldest petrochemical complex in the port of Rotterdam. Left, the New Waterway and, on the horizon, the city of Rotterdam.

Table 10 — Share of energy sources in the European Community and in the Netherlands, 1975 and 1982 (as a % of gross domestic energy consumption)

	Coal and Lignite	Petroleum	Natural Gas	Nuclear Energy	Other	Total
E.E.C.10						
1975	23	57	16	3	1	100
1982	24	49	18	7	2	100
Netherlands						
1975	4	40	55	1	0	100
1982	8	39	49	2	1	100

Source: Eurostat

Both of these new impulses to the Dutch economy, seaport industrialisation and the exploitation of natural gas, have a wider significance than indicated by the production figures. They make an important contribution to Dutch exports alongside dairy and horticultural products. The income from natural gas is an important help in keeping the welfare state afloat, since despite the turn in the economic tide in the 1970's, that state has become more a reality in the Netherlands than in many other countries. This brings us to the question of how things have gone in the other small industrial countries and to what extent there are parallels with and differences from the Netherlands.

1.4.2.2. Profile of some small industrialised countries

An industrial portrait of the Netherlands can best be given by setting out a series of industrial indicators for a number of small industrial countries (Table 11).

The initially rapid growth in the Netherlands, measured by the size of the gross domestic product, petered out during the course of the 1970's. Switzerland was the first country to encounter problems, but it has recovered in recent years. The Netherlands began the 1980's badly and remains below the very moderate growth rate of the E.E.C. and the small industrial countries, which are doing slightly better. The Netherlands still scores high in terms of GDP per worker. It was able to gain its position in second place after Switzerland and well above the E.E.C. average thanks only to the production of natural gas. Because of a relatively youthful age structure and a continuing low participation by women in the production process, the Netherlands occupies a less favourable position in respect of GNP per head. The extremely high unemployment rate in the Netherlands is accounted for mainly by the relatively large group of young people in the population. The figures for the Alpine countries are surprisingly low. Except

Table 11 – The Netherlands compared with a number of other small industrial countries and the E.E.C., 1982

	Belgium	Denmark	Austria	Switzerland	E.E.C.	Netherlands
Population (mill.)	9.9	5.1	7.6	6.5	271.4	14.3
Gross Domestic Product						
per head (1000 gld)	22.8	29.4	23.6	39.9	23.2	25.7
per worker (1000 gld)	63.6	60.0	50.6	76.8	56.3	70.2
growth per annum						
1967 – 1973	5.2	4.0	5.7	4.3	4.9	5.5
1973 – 1979	2.4	2.1	2.9	-0.4	2.5	2.5
1979 – 1983	0.9	1.2	1.5	1.1	0.6	0.1
Gross Investments						
growth per annum						
1973 – 1979	1.4	-1.2	0.9	-2.9	0.5	0.0
1979 – 1983	-4.4	-5.4	-1.3	2.8	1.2	-3.7
Exports						
goods and services as % of GDP	73.2	35.6	41.4	35.4	29.9	57.5
structure of goods eports (in %)						
agricultural products	10.3	31.9	4.3	3.3	11.1	20.0
raw materials	3.2	7.5	7.6	1.6	3.3	5.7
fuels	9.1	3.3	1.8	0.1	9.6	24.2
chemical products	11.7	7.5	9.2	20.6	11.5	15.2
machinery & vehicles	21.9	25.0	27.4	32.2	32.9	16.1
other manufactures	43.9	24.8	49.7	42.1	31.5	18.8
Working population						
as % of pop. age 15-64						
total	64.4	80.1	68.8	71.8	66.2	57.1
males	79.9	88.3	83.5	93.6	83.6	78.4
females	48.7	71.8	54.8	50.3	48.9	35.2
Employment (%)						
agriculture	3.0	7.3	8.8	7.0	7.9	5.0
manufacturing	33.4	29.3	39.5	39.3	37.1	30.2
government	18.0	29.6	18.7	10.2	17.4	15.4
other services	45.6	33.8	33.0	43.5	37.6	49.4
Unemployment (%, 1983)	12.0	10.5	4.5	1.0	11.0	15.0

Source: Central Plan Bureau, Central Economic Plan, 1984

for the remarkable recovery of Switzerland, the picture of gross investments is a gloomy one for most countries.
In the small industrial countries manufacturing accounts for 30 to 40% of total employment. The Alpine countries are relatively highly industrialised, the Netherlands and Denmark slightly less so. The private services sector is well represented in the Netherlands, its main components being international trade and transport and many social services partly or wholly subsidised by the government (in Denmark these are operated by the government). The differences between the small industrial countries are brought out still more sharply by a comparison of the importance and structure of exports. The Belgian economy is an extremely open one, while the Dutch economy is also much more externally oriented than those of the Alpine countries (35-40%). Nearly a third of Dutch exports go to the German Federal Republic, more than a third to the other E.E.C. countries. Only 15 to 20% of Dutch exports find their way outside Europe, which means that too little advantage is taken of the strongly expanding markets of the United States, Japan and the new industrial countries at a time when Europe is much less dynamic. The structure of the export of commodities of the Netherlands forms a strong contrast with that of the other small industrial countries. Agricultural products come high on the list (as they do in Denmark) and so does natural gas. Chemicals score relatively high. The Dutch exports are of heavy chemicals, while Switzerland exports high-value pharmaceuticals. Switzerland's strength is also accounted for by its exports of machinery and expensive, high quality consumer goods. Belgium exports a wider variety of commodities than the Netherlands.

I.4.2.3. The Netherlands as the seat of multi-national enterprises

In comparison with the other small industrial countries, the Netherlands is the home of a relatively large number of head offices of firms with an international field of operations (Table 12).

Table 12 – Firms with head offices in a number of small industrial countries, 1982 (top-500 non-US corporations)

	No. of Head Offices	Turnover, worldwide (x 1 mln. $)	Employment (worldwide)
Belgium	6	22,401	114,713
Denmark	2	1,590	13,411
Austria	3	9,512	99,714
Netherlands	11	143,641	959,360
Switzerland	12	44,154	571,847

Source: Fortune, August 22, 1983

This fact is illustrated best in terms of turnover, which indicates that the activity is highly oriented towards raw materials. This also becomes evident when the nature of the Dutch firms is examined (Table 13).
The activity of the Swiss firms is relatively more labourintensive and more oriented towards the later stages in the pro-

Table 13 — Firms with head offices in the Netherlands, 1982

Ranking in world list of firms outside U.S.A. (top-500)	Name of firm	Product	Head Office	Turnover (US $ mln worldwide)	Employment (worldwide)
1	Shell	oil, chemicals	The Hague /London	83,759	163,000
5	Unilever	food, chemicals	London/ Rotterdam	23,120	28,300
13	Philips	electronics	Eindhoven	16,093	336,200
54	DSM	chemicals	Heerlen	6,802	28,610
88	AKZO	chemicals syn.fibres	Arnhem	5,298	73,700
221	Hoogovens	steel	IJmuiden	2,225	29,785
231	Esso Nederland	oil, chemicals	The Hague	2,105	1,740
386	Heineken	drinks	Amsterdam	1,213	20,931
402	Wessanen	food	Zaanstad	1,128	3,265
436	Douwe Egberts	food, tobacco	Utrecht	1,001	6,084
462	Van Leer	metal, paper	Amsterdam	897	13,531
			total	**143,641**	**959,936**

Source: Fortune, August 22, 1983

duction process (pharmaceuticals, machinery, armaments). The turnover and employment of the Dutch firms would be at the Swiss level, however, if two firms at the top of the world league, both of Anglo-Dutch origin, were not included. Shell, the largest non-American company in the world, and Unilever, have only a very small proportion of their employment in Dutch establishments (1 in 10 and 1 in 25). For Philips and AKZO this proportion is considerably higher, about a quarter. DSM, a state enterprise originating with the coal mines, and Hoogovens, with the state as a minority shareholder, are mainly localised in the Netherlands.

The Fortune list is a ranking by turnover, so that Shell comes before Philips. Another consequence of this is that a number of food-manufacturing firms which export all over the world do appear on the list, but not shipbuilding (RSV) and textile enterprises which have more employment.

Photo IX — The Philips factories dominate the townscape in the centre of Eindhoven. In the centre background, the ***Evoluon****, the Philips exhibition centre.*

Multi-national enterprises present national governments with the problem that they have no control over their activities. They shift their production capacity around the world, in search of the best location pattern. The existence of a head office gives a country the advantage of the presence of highly qualified management personnel and numerous high value activities (e.g. research). Philips is a good example (photograph IX).

The Netherlands was much in favour with foreign firms looking for relatively cheap labour during the period of industrialisation in the 1950's. During the 1960's the access to the rapidly growing E.E.C. market and the seaport industrialisation formed an attraction for foreign investments. American, British and Scandinavian firms were in the forefront here. These factors were much less of a stimulus for firms from other E.E.C. countries (this also applies to the U.K. after 1973). During the past decade it has been mainly trading and services firms which have become established, such as Japanese firms using the Netherlands as a point of entry to the E.E.C. market (Table 14).

Although foreign firms account for only 8% of manufacturing employment, in 1963 the proportion was only 3% and in some industries it is now approaching 20% (e.g. in the chemical industry). It is striking that the modest Japanese contribution is outside the manufacturing sector, in contrast to the industrual orientation of the Swedes (Table 14). American firms continue to play a dominant role (for a number of years they have provided 50-60% of employment, both inside and outside manufacturing).

Table 14 – Employment of foreign firms in the Netherlands, 1984

	Manufacturing	%	Commerce	%	Services	%	Total	%
United States	36,836	62.2	14,952	24.6	7,778	13.1	59,206	100
F.R. of Germany	6,279	58.6	3,370	31.4	1,073	10.0	19,722	100
United Kingdom	5,890	55.1	2,621	24.5	2,174	20.3	10,685	100
Sweden	8,424	79.4	1,784	16.8	397	3.7	10,605	100
Japan	701	27.0	1,214	46.8	681	26.2	2,956	100
Other	6,349	38.0	5,693	34.1	4,653	27.9	16,695	100
TOTAL	**64,479**	**58.3**	**29,274**	**26.5**	**16,756**	**15.2**	**110,509**	**100**

Source: A. Loeve, Geography Department, Utrecht

I.4.3. STRUCTURE OF DUTCH MANUFACTURING INDUSTRY

When, in the 1970's, the volume of production began expanding only slowly and many jobs were lost after the earlier tempestuous growth of Dutch industry, it was at first thought that this was due to economic recession. When the energy crises also took effect (1975 and 1980 were disastrous years), industry stagnated. The question is where are the weak points, are there still areas of growth and did the blows affect mainly the large or the small firms?

I.4.3.1. Strengths and weaknesses of Dutch industry

In the mid-1960's certain weak spots were already showing themselves in Dutch manufacturing industry. They included shoes, clothing and textiles, as well as shipbuilding, brickmaking and coal mining. The main causes of the difficulties were new substitute products and increased foreign competition. These groups of industries showed a strong regional concentration and their decline resulted in structural unemployment in a number of traditional industrial regions (Twente, Tilburg, South Limburg, Rotterdam). The volume of production of most industries, however, continued to increase dramatically (Table 15).

The capital-intensive industries were in the forefront of the production increases. Because of the rapid wage rises (and labour shortages) Dutch industry had lost its labourorientated character. The lead was taken by the petroleum and chemical industries, along with electronic engineering and the printing industry (the two latter industries are not shown separately in Table 15). In 1953 the growth industries of chemicals, metallic and electrical engineering accounted for only one third of industrial employment, but in 1970 the proportion had risen to a half. The picture became much more complex during the period of transition from rapid growth to stagnation in the first half of the 1970's, when the real weak spots were revealed. The most striking feature is that there has been no further fall in production in the clothing, textiles and footwear sector, but the employment there has been more than halved. There has been an enormous increase in labour productivity, which has been greatly underestimated. It is still thought rather that there will be a further fall in production. A recovery in production is to be observed in the paper industry, for example, but there, too, technological innovation is resulting in a loss of jobs. A conclusion which applies to a number of industries is that a slight to moderate increase in production is accompanied by a loss of jobs and nowhere is employment growth occuring at the aggregation level of industries (although it may have occcurred in individual companies). In the growth industries of chemicals, printing, metallic and electrical engineering (excl. shipbuilding) there

Table 15 – Trends in Industrial Production and Industrial Employment by Industry, 1963 - 1982/83

Industries *)	Industrial production			Industrial employment		
	1970 (1963 = 100)	1976 (1970 = 100)	1982 (1975 = 100)	1970 (1963 = 100)	1976 (1970 = 100)	1983 (1975 = 100)
Food, drink, tobacco	148	122	123	98	92	82
Textiles	117	78	83	70	57	46
Clothing	89	61	62	78	45	40
Leather, shoes	104	57	89	107	55	66
Timber, furniture	*	*	*	99	86	61
Paper	163	106	173	98	88	74
Printing	*	105	116	111	116	93
Petroleum industry	241	111	96			90
Chemicals	311	147	131	126	124	88
Rubber, plastics	138	112	122			84
Building materials	159	107	92	92	79	71
Metal manufacture	213	111	105	115	104	83
Metal goods			107	110	130	69
Engineering		112	105	109	78	77
Electr.engineering	168	125	136	120	92	83
Vehicles		101	96	99	105	74
Instruments		*	142	103	*	94
Other manufacturing	*	*			*	85
Manufacturing (total)	172	115	115	100	90	77

*) Figures for the division of industries used here are available from 1970. Estimates for the time series 1963-1970 are either not reliable for certain industries, or the data is lacking.

Source: Monthly Industrial Statistics (CBS)

Table 16 — Industrial employment by size of firm and by industry end of 1974 and 1982 (x 1,000)

Industry	1974 small (10-49)	medium (50-199)	large (200+)	total	1982 small (10-49)	medium (50-199)	large (200+)	total
Food, drink, tobacco	21.7	35.1	96.8	153.6	24.7	31.7	82.0	138.0
Textiles	4.8	14.8	35.5	55.2	4.3	8.5	12.9	25.6
Clothing	8.6	11.1	13.4	33.1	4.0	6.0	2.6	12.7
Leather, shoes	3.8	7.2		11.0	2.6	3.1	0.9	6.6
Timber, furniture	17.2	15.8	6.9	39.8	14.8	9.0	2.6	26.4
Paper	2.6	10.0	19.0	31.6	2.2	8.5	12.3	23.0
Printing	16.0	20.9	24.6	61.4	15.7	19.2	25.2	60.1
Petroleum industry				10.8				10.0
Chemicals	4.4	15.9	73.5	93.8	4.0	8.9	70.9	83.7
Rubber, plastics	4.8	8.9	13.4	27.1	5.5	7.8	10.4	23.6
Building materials	10.1	13.6	16.9	40.6	8.0	10.0	13.3	31.4
Metal manufacturing				39.6				34.5
Metal goods	25.1	29.7	41.1	95.8	24.7	24.9	13.4	73.0
Engineering	18.3	28.7	45.9	92.9	18.3	28.2	31.7	78.1
Electr.engineering				122.4				107.6
Vehicles	9.3	14.6	59.3	83.2	9.0	10.0	50.1	68.1
Instruments	2.5	7.2		9.6	2.7	5.9		8.6
Other manufacturing	1.8	3.4		5.1	1.7	3.3		5.0
Manufacturing (total)	155.1	242.6	608.9	1006.6	145.6	191.9	478.7	816.2

Source: Monthly Industrial Statistics (CBS)

has been generally a decline in employment of between 10 and 20% during the past seven years. The continuing crises in the petroleum, construction and shipbuilding industries are reflected in the figures in Table 15.

I.4.3.2. Large and small in Dutch industry

The Netherlands has 219 firms with over 500 employees. There has been a marked reduction in the number of large firms since 1974 and the number of jobs they provide has declined by over 80,000. There are more newspaper reports about these large firms than about the smaller ones, but the loss of jobs in the latter has sometimes been relatively greater (Table 16). Besides market factors, mergers and rationalisation have also played a part and numerous medium-sized family firms have disappeared. It is noteworthy that firms with less than 50 employees have generally done much better than larger ones, although more firms have entered this category as a result of contraction. Industrial enterprises with 10 to 20 employees are even growing, despite the counter-pressures! Nevertheless, the very large firms continue to dominate the picture, with 43% of (declining) manufacturing employment, while the very small firms account for only 6%.

Large and small firms are unevenly distributed over the industries. Large establishments predominate in the metallurgical and basic chemicals industries. They are mainly parts of international companies, whether or not of Dutch origin (Table 16). The same applies to electronics engineering (Philips) and the vehicles industry (shipbuilding, DAF-Volvo). Establishments in the clothing and leather industries, on the other hand, are small. There are also numerous small firms in the metal industry, which - like the mainly small printing and food manufacturing firms - are clearly gaining in importance. In the furniture industry the small firms are also suffering a considerable loss of employment.

The large textile works are steadily disappearing from the scene. Instead of the 20 companies with over 500 employees in 1974, there were only 7 at the end of 1982, and the number of firms with 200 to 500 employees declined from 52 to 23. The large firms in this sector dominated the regional picture of Twente and Tilburg, as shipbuilding did, for example, in Rotterdam. This decline has already been in progress, with ups and downs, for two decades. The reaction to it in industrial and regional policy will be discussed in the final section, but the next aspect to be considered is regional dynamics.

I.4.4. THE CHANGING REGIONAL PICTURE

The transition from industrial growth to restructuring is also evident from the industrial development of the regions, although numerous minor differences appear at this level. The regional repercussions of restructuring are generally very specific ones. Around 1963 it was easy to point to industrial areas with a specific character on the map of the Netherlands. The industrial picture of a region was sometimes dominated by a single industry, such as textiles. It is precisely these regionally concentrated industries which have been the worst hit by restructuring. The result has been a "crumbling" of the geographical picture. The mosaic of industrial regions, each with its own specific character, is now far less pronounced. Industry is losing ground nearly everywhere as a source of employment, although regionally to a widely varying degree. This brief outline of regional industrialisation requires further elucidation.

I.4.4.1. Regional contrasts in industrial dynamism

Regional industrialisation certainly had some success in the 1960's, most spectacularly in the seaport areas outside the Western Netherlands (fig. 24). Because the possibilities for expansion in Rotterdam were limited, the smaller ports gained an opportunity. The ports along the Scheldt, in particular, including those near Antwerp, benefitted from the growth of the metallurgical and petrochemical industries. In the IJmond (North Sea Canal) Hoogovens expanded their steel production. A number of problem areas, such as Friesland and Drenthe, as well as parts of the South East Netherlands, attracted more industrial enterprises. Subsidiary establishments of large Dutch and foreign firms found there the labour which was no longer obtainable in the Western Netherlands.

Figure 24 — Regional changes in manufacturing employment, 1963 - 1975
Source: S.W.P.

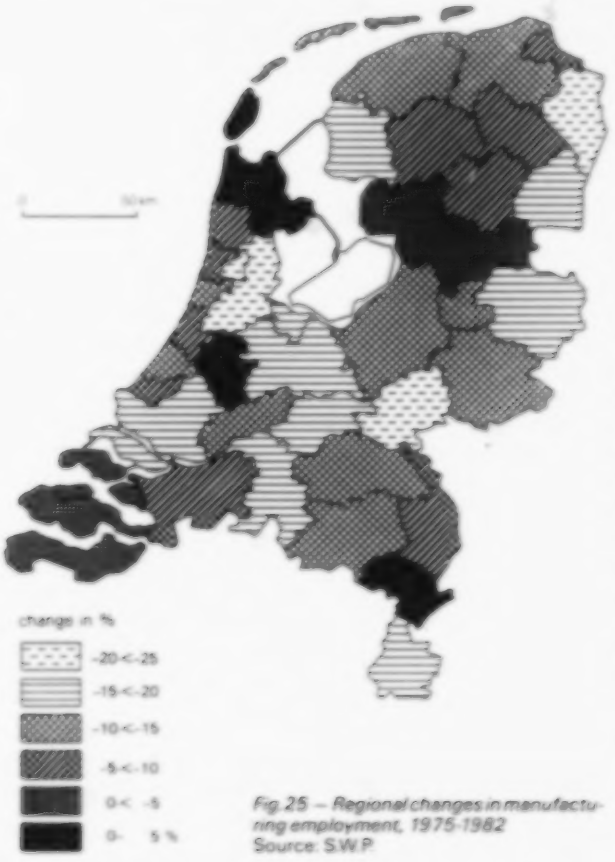


Fig. 25 — Regional changes in manufacturing employment, 1975-1982
Source: S.W.P.

Sometimes the main establishments themselves were moved, but this was more characteristic of the marginal areas of the Randstad, as in the north of North Holland, the Veluwe and West Brabant.

Photo X — A former textile mill in Enschede which has been converted into a museum and flats for people living alone.

Large-scale losses of industrial employment began to occur from the mid-1960's. The industries most affected were the Twente textile industry (photograph X), the coal mines of South Limburg *) and the shoe and textile industries of Central Brabant. Restructuring also occurred in the agriculturally based industry of East Groningen and the food industries of the Zaan district. These were all areas which are engraved in the mental industrial map of many Dutch people. Nevertheless what was happening went beyond the decline of the traditional industrial regions. Industrial employment was visibly diminishing in nearly all the towns and cities of the Western cities of the Western and Central Netherlands, partly as a result of restructuring (shipbuilding in Amsterdam and Rotterdam, metal in Utrecht) and partly through migration to the areas referred to earlier. The regional picture of changes in industrial employment since 1975 gives cause for pessimism. The city of Nijmegen, for example, which has incidentally been confronted with the problems of the contraction and closure of large industries for some time, has been particularly badly affected. The traditional industrial regions lost further ground and the contraction is continuing in the major cities. Areas where regional industrialisation had been successful, such as South East Drenthe, suffered reversals, but Limburg formed an exception. The overspill to northern North Holland and the new polders (growth centres), as well as to the Green Heart within the Randstad continued. The rapid growth of the port regions ceased after the 1973 energy crisis. In Zeeland the industrial employment situation continued for some time to be better than elsewhere.

*) see, for example, the leading article in the IDG Bulletin for 1981-82.

I.4.4.2. The importance of manufacturing industry for the regions

Manufacturing industry is not the only means of livelihood, but it is basic in character. Technological developments have caused the loss of many jobs, but manufacturing industry can continue to make an important economic contribution in other ways, such as the way in which the income from natural gas covers the cost of a good deal of service employment.

The international trading and transport function of the Netherlands forms the second segment for basic employment. It is also important to point out that many functions which were previously performed on the factory site, such as administration and research, are now carried out elsewhere in independent establishments, such as offices and laboratories. Employment continued to grow in these areas for a number of years while the factories were shedding jobs. The process of mergers and rationalisation further reinforced this trend after 1970. These functions are carried out very largely in the cities of the Western and Central Netherlands (c. 80% of office floorspace). It is striking that there has been no decentralisation in the offices sector, as there has been in industry through relocation and the opening of branch establishments.

Moreover, it must be remembered that there are other criteria than employment which are important for measuring the regional significance of industry. Unfortunately, such material is not available in adequate volume. Investment statistics show that the seaport areas score relatively high, which is not surprising, since investment there in recent years has been one third above what might have been expected on the basis of their share in the national economy. Even allowing for the unused capacity in the metallurgical and petrochemical industries, replacement investments are already so extensive that they easily exceed the investments elsewhere in the national economy. The gentlemen's agreement between the Dutch government and the oil companies (Shell and Esso) benefitting from the profits from natural gas, has resulted in further investment in the port of Rotterdam. Relatively low industrial investments are recorded in the Central Netherlands, a region which is gaining greatly in importance in trade and services, and in the traditional restructuring regions. New enterprises, usually with a very modest starting capital, occur mainly on the fringes of the Randstad and in the so-called Intermediate Zone (Brabant, Gelderland).

Another way of measuring the industrial importance of the regions, the gross added value (at market prices, Table 17), reveals that certain areas which are included in the regional industrialisation policy are relatively highly dependent on manufacturing industry for their economic basis (e.g. Drenthe, North Brabant and Limburg). This high score of around 40% is also reached by the seaport regions (Zeeland, Groningen, Rijnmond [Rotterdam] and IJmond), but is generally camouflaged by such factors as the enormous contribution of natural gas (Groningen) or the relatively smaller role of industry in the large cities (North and South Holland).

The gross domestic product per head of the population is high in the Randstad, 25% above the European level (Table 17). Outside the Randstad, however, this level is only just reached. Reference was made earlier to the low participation by women in the labour force in the Netherlands, and this explains the poor score per head (as compared with per worker).

Table 17 – Gross Added Value and Gross Domestic Product at market prices, by province

Provinces/ regions	Share of Manufacturing Industry in Gross Added Value (1979)*)	Gross Domestic Product per head (1980) (EEC 10 = 100)**)
North Netherlands	***52.2***	***142***
Groningen	66.8	225
Friesland	29.8	88
Drenthe	39.9	107
East Netherlands	***31.6***	***97***
Overijssel	35.5	96
Gelderland	29.4	98
West Netherlands	***28.7***	***123***
Utrecht	23.8	113
North Holland	27.9	126
South Holland	29.4	125
Zeeland	41.4	111
South Netherlands	***38.7***	***100***
North Brabant	38.8	102
Limburg	38.6	95
NETHERLANDS	***34.3***	***116***

*) inc. winning of raw materials and public utilities
**) measured in ECU's (European Currency Units)
Source: Eurostat

Does the Netherlands still have any major industrial regions? Two important industrial regions still exist in the vicinity of Rotterdam and Amsterdam, with which only North Brabant is comparable. In 1984, nearly 100,000 of the country's 800,000 industrial jobs were located in the zone between the Maasvlakte and Gorinchem, situated along the rivers and in such cities as Rotterdam and Dordrecht. There are nearly 90,000 industrial jobs in the region of the North Sea Canal, including the conurbation of Amsterdam, IJmond and the Zaan district. Eindhoven, Rotterdam and Amsterdam together form the leading trio of the Dutch industrial centres. The chain of towns in North Brabant and the two highly internationally-oriented industrial zones in North and South Holland are followed at a great distance by the sorely tried historical industrial regions of Twente and South Limburg, each with 35 to 40,000 industrial jobs. (There were still at least 50,000 industrial jobs in these areas in 1975). The third level is formed by a number of less prominent industrial districts, each with 20 to 25,000 industrial jobs. These include the Peat Colonies in the north east and a number of urban centres (Utrecht-Amersfoort, Arnhem-Nijmegen, The Hague). The majority of towns with a population of 100,000 or over contain 10 to 15,000 industrial jobs.

The importance of industry for the regions varies widely. There are still areas with a relatively pronounced industrial character (fig. 26). The chief of these are the IJmond, with its great iron and steel works, and south-east North Brabant, which is dominated by Philips. The Peat Colonies, Twente/Achterhoek, Zaan district and the area around Dordrecht still have a marked industrial orientation. New industrial centres are to be found in the seaport areas of Zeeland and Delfzijl, but Limburg also has this status. In large parts of the country, industry provides jobs for more than 30% of the working population. There are many urban areas in the Rand-

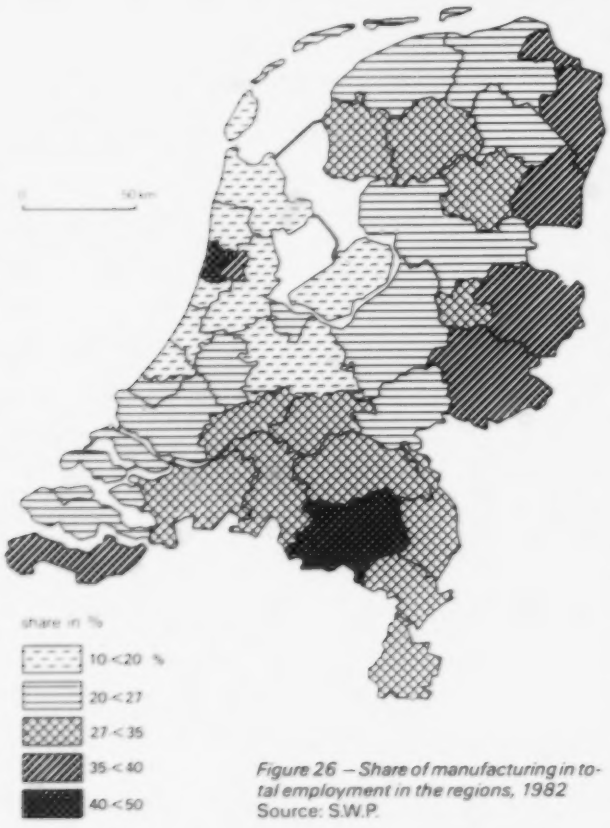


Figure 26 – Share of manufacturing in total employment in the regions, 1982
Source: S.W.P.

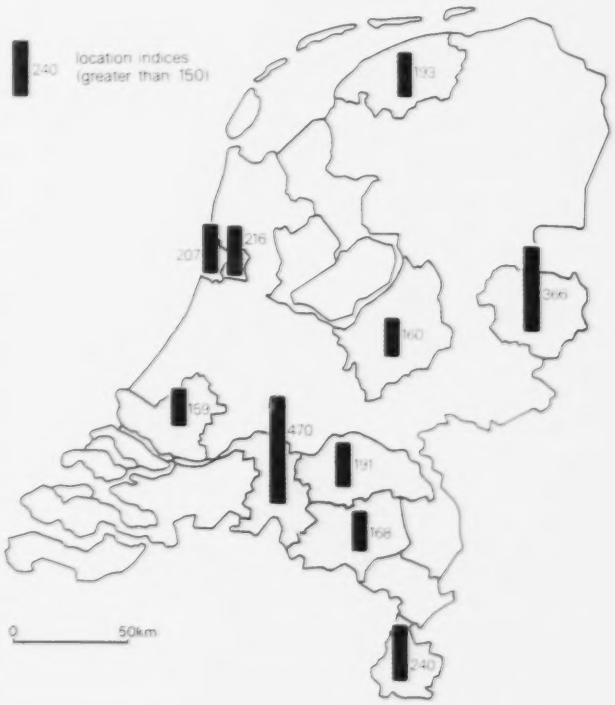
stad, however, where the proportion is only 10 to 15%, with the major office centres of Amsterdam and The Hague as the most prominent.

I.4.4.3. Crumbling industrial picture

Sheet XV-6 of the first edition of the monumental Scientific Atlas of the Netherlands consists of a series of maps showing the location pattern of twelve industries in 1963. The pattern does not differ greatly from that shown on the maps illustrating the situation in 1930. During the past twenty years the geographical picture has become less distinctive. There is little value in giving a detailed analysis of the location pattern for each industry, but it is useful to consider where the main combinations of industries are markedly over-represented. The following are the groupings concerned: a. the food, drink and tobacco industries; b. the textile, clothing and shoe industries (characterised by radical restructuring); c. the chemical industry (inc. oil refineries, a significant growth sector in the Dutch economy until the energy crisis); and d. the metallic and electrical engineering sector (the possibly over-comprehensive range of industries from metallurgy, engineering and vehicles to electronic engineering and metal products). These concentrations must have a minimum of 5000 industrial jobs and a degree of over-representation of at least 50% relative to the national average (location quotient of 1.50).
Figure 27, which is a map of specific industrial concentrations compiled to conform to these strict, but arbitrary criteria, shows that not many markedly one-sized areas remain. Rijnmond (seaport) and South Limburg (DSM) show concentrations of the chemical industry of sufficient scale. IJmond (Hoogovens) and Eindhoven and its region (Philips) are centres of the metallurgical and electronics industries, respectively. The Zaan district is still important as a centre of the food industry, as Leeuwarden and its region are for the dairying industry and north-east North Brabant for meat products and other branches of the food, drink and tobacco industry. The most striking feature of the map is the geographical concentration of the textile, clothing and footwear industries. The picture just given is all that remains of a far more colourful mosaic from before the period of restructuring. Many factories have disappeared and there is a much more dispersed location pattern – particularly in light industry.

I.4.5. INDUSTRIAL AND REGIONAL POLICIES

A period of industrialisation under government guidance ended around 1963. It was characterised by a centralistic wage policy and accompanied by a range of measures to improve the industrial climate. Eight industrial reports were published, the first of which were more in the nature of blueprints than the latter ones. They always included a chapter on regional industrialisation, which had been pursued since 1949. The aim of the policy was to reduce unemployment in a number of mainly peripheral regions experiencing problems on the labour market as a result of the exodus of workers from agriculture and/or high population growth.



Source: Statistics of Persons in Employment, CBS 1982

Figure 27 – Regional concentrations of combinations of industries, 1982

II. STATISTICS

II.1. Introduction

In this chapter some recent statistics will be supplied on themes which are shown, by school textbooks and the questions received at the IDG, to be raised frequently in the geography lessons of other countries. The reader is further referred to the detailed statistics given in the first chapter of this Bulletin, particularly in the sections on demography, agriculture and industry.
Unless otherwise stated, the statistics have been supplied by the Central Bureau for Statistics.

II.2. Population and area

The population of the Netherlands was 14,394,589 on 1st January 1984. The population density was 424 per square kilometre of land (on a total area of 33,935 km²), 386 per square kilometre of the total incorporated area (37,291 km²) and 347 per square kilometre of the total territory of the Netherlands (41,473 km²). The population increased by 55,038 persons in 1983. The growth was largely the result of natural increase; emigration and immigration were more or less in balance (Table 18).

Table 18 — Key demographic figures for 1983 (per mille)

birth rate	11.8	
death rate	8.2	
natural increase		3.7
emigration	4.2	
immigration	4.6	
net migration balance		0.4
balance of administrative corrections		-0,2
total population growth		3.8

Table 19 gives, by province and region (see fig. 28) the land area, population and population density at 1st January 1984, and the population increase since 1st January 1979.

II.3. Economically active population

Table 20 shows the division of work performed in man years over the economic sectors in 1983.
With regard to unemployment, the situation — expressed in percentage terms — is most serious in parts of the North and East Netherlands. The largest *numbers* of unemployed are to be found, however, in the provinces of South Holland and North Brabant. The percentage of registered unemployed (17.5% in 1983) more than doubled between 1977 and 1983. The rate of unemployment growth appeared to be slowing down in 1984.

Table 20 - Breakdown of employment (by man years) by economic sector, in %

	1983
agriculture and fisheries	6.0
industry	27.9
services	50.0
central and local government	16.1

II.4. Agriculture and horticulture

Of the total area of the Netherlands nearly half is cultivated land (as far as the total incorporated area is concerned — i.e. excluding Lake IJssel, the Wadden Sea and a strip of the North Sea — the proportion is 65%). Nearly 60% of the cultivated land is used as grassland (Table 21).

Table 21 — Cultivated land, 1983

total area of cultivated land x 1,000 ha.	2009	
of which in use for		
arable farming		35%
horticulture		6%
grassland		59%

The number of agricultural holdings has declined by more than a half since 1960, from 301,000 to 139,000, while the

Table 19 — Area, population and population density at 1st January 1984 and population increase, 1979-1984

	land area* in km² 1 Jan 84	population x 1,000 1 Jan 84	population per km² of land 1 Jan 84	% growth 1 Jan 79 to 1 Jan 84
Groningen	2335	561.5	240	1.9
Friesland	3336	597.2	179	3.3
Drenthe	2654	427.3	161	2.7
NORTHERN NETHERLANDS	**8324**	**1586.1**	**191**	**2.6**
Overijssel	3811	1042.1	273	3.2
Gelderland	5006	1735.8	347	3.3
Southern Lake IJssel Polders **	974	111.2	114	89.4
EASTERN NETHERLANDS	**9791**	**2889.1**	**295**	**5.1**
Utrecht	1332	929.4	698	4.9
North Holland	2668	2307.4	865	0.4
South Holland	2907	3139.2	1080	2.5
WESTERN NETHERLANDS	**6907**	**6376.0**	**923**	**2.0**
Zeeland	1785	355.5	199	3.2
SOUTH WEST NETHERLANDS	**1785**	**355.5**	**199**	**3.2**
North Brabant	4957	2103.0	424	3.6
Limburg	2170	1083.6	499	1.7
SOUTHERN NETHERLANDS	**7127**	**3186.6**	**447**	**2.9**
NETHERLANDS ***	**33.935**	**14394.6**	**424**	**2.9**

* area exc. waters wider than 6 metres
** i.e. the non-allocated municipalities of Almere, Dronten, Lelystad and Zeewolde and the Public Authority of the Southern Lake IJssel Polders
*** population of the Netherlands inc. persons without a fixed abode entered in the Central Population Register

Figure 28 - Regions and provinces (cf. Table 19)

average area has nearly doubled, from 7.7 ha in 1960 to 14.5 ha in 1983.
In 1983, agriculture was responsible for 5.3% of the total Dutch domestic product, 4.3% of the net national income and 24% of the total value of Dutch exports.

II.5. Exploitation of minerals, and manufacturing industry

The energy balance for 1983 (Table 22) shows that petroleum and natural gas are responsible for the lion's share of the Dutch energy supply. The petroleum is largely imported, while the Netherlands produces so much natural gas that more than half of it can be exported.
Table 23 gives a summary of the number of establishments with 10 or more employees and the number of persons employed, by industrial order. A remarkable fact is that, in the Netherlands, a country that produces no iron ore whatsoever and has mined no coal of its own since 1975, the metal industry is by far the largest branch of industry. More than half of the establishments - nearly 1950 - included in the table belong to the metal working sector. They include the engineering, electronic engineering and vehicle industries.

Table 23 — No. of establishments and no. of employees per industry at 30th September 1983

	no.of establishments	employees x 1,000
Food, drink and tobacco	1552	137.7
Textiles, clothing and leather	698	42.1
Timber and furniture	758	25.0
Paper, paper products and printing	1261	83.0
Petroleum, chemicals and rubber	684	116.4
Building materials, pottery, glass and cement	524	29.7
Metal industry	3537	355.8
Other industries	107	4.9
Total	9121	794.6

II.6. Foreign trade

In 1983 the total value of imports into the Netherlands amounted to 175,264 million guilders, which is about 12,197 guilders per head of the population. Exports amounted to 186,695 million guilders, or 12,992 guilders per head. Table 24 gives a summary of the kinds of commodities imported and exported, while Table 25 shows how the foreign trade in 1983 was divided between the different countries and regions of the world.

Table 24 — Imports and exports by commodity groups, 1983, in %

Imports		Exports	
Raw materials and semi-manufactures	62	Unprocessed agricultural products	7
Consumer goods	15	minerals	7
Capital goods	11	total manufactures	84
Other goods	12	of which:	
		food, drink & tobacco	17
		textiles, clothing	3
		petroleum products	16
		chemical products	19
		metal goods	24
		other manufactures	5

Table 25 — Imports and exports by countries/regions, 1983, in %

	Imports		Exports	
Fed.Rep. of Germany	22		31	
Belgium and Luxembourg	11		14	
France	7		10	
United Kingdom	9		9	
Italy	3		5	
Other EEC partners	2		3	
total EEC		54		72
U.S.A.		9		4
other countries		37		24

Table 22 — Production, import, export and consumption of petroleum, natural gas and nuclear energy, 1983 in 10^{15} joules *)

	coal	crude petroleum	petroleum products	natural gas	nuclear energy + other	total energy sources
production	–	124	–	2422	86	2634
imports	231	1717	1106	101	18	3173
exports	44	10	1862	1302	1	3219
bunkers	–	–	256	–	–	256
withdrawn from stocks	31	33	32	0	–	96
gross consumption	218	1865	-979	1221	103	2428

*) 10^{15} joules are the equivalent of 23.4 million kg of petroleum or 31.6 million cubic metres of natural gas

II.7 Environment

In a densely populated country such as the Netherlands, situated as it is on the lower reaches of several major European rivers, the quality of the surface water forms a subject of continuing concern. The sources of pollution are both local and external.
The capacity of the country' sewage treatment plants increased by 153% between 1971 and 1982 (Table 26).

Table 26 — Installed Capacity of Sewage Treatment Plants at 1st January in population equivalents x 1000 °)

	1971	1982
Mechanical	2618	1815
Biological	5756	19354
Total	8374	21169

°) 1 population equivalent = the volume of decomposable material, the oxygen requirement of which corresponds on decomposition to that of the effluent of 1 person.

One of the components of the pollution of river water is the salt load. Table 27 shows that this component is much smaller in the Meuse than in the Rhine (see also Section III.4.1.).

Table 27 — Flow, concentration and load of chlorides in the Rhine and Meuse where they enter the Netherlands

	Unit	1972	1980	1983
Rhine				
flow	m^3/sec	1526	2550	2585
concentration	mg Cl^-/litre	238	168	173
load	kg Cl^-/sec	316	386	367
Meuse				
flow	m^3/sec	127	307	303
concentration	mg Cl^-/litre	40	41	54
load	kg Cl^-/sec	4.7	9.4	9.2

III. BRIEF NOTES

III.1. Traffic and Transport

In and around the port of Rotterdam

The end of August 1983 saw the completion of the deepening of the "Euro Channel" to 70 feet (over 21 metres) over a distance of 40 kilometres. The Euro Channel is a shipping channel connecting the entrance to the port of Rotterdam/Europort with the deep water shipping lane in the middle of the North Sea (fig. 29). The complete channel is nearly 60 kilometres long. Ships up to 310,000 tons are now able to enter the port of Rotterdam. In the near future, after further dredging, the permitted depth will be 72 feet (21.95 metres), enough for ships of 350,000 tons. This means that there will be a guaranteed depth of about 28 metres along the whole of the shipping lane (22 metres draught of the ship plus 6 metres of clearance for the keel).

Figure 29 — The "Eurochannel" ('Eurogeul') as a connection between the port of Rotterdam/Europort and the deep water channel in the North Sea

The costs of the project - about 50 million guilders - have been borne by the city of Rotterdam; half of the operational costs will be paid by the state.

In the most westerly section of the port — the Maasvlakte — a new quay for ore transhipment was commissioned at the same time, where ships with a draught of up to 75 feet (400,000 tons dw.) can tie up (1 on fig. 30).
Some of the oil refineries in the port have also been adapting to the changing circumstances, namely, the increasing demand for light petroleum products such as petrol, at the expense of heavier products such as heating oil. In Europort both Esso and Shell are investing vast sums in the construction of new installations for converting heavy oil fractions into lighter ones (2 and 3 in fig. 30). Systems are also being developed to remove more of the sulphur from the smoke gases.
A third interesting development in the port of Rotterdam is the commissioning of an 80 hectare container terminal on the Maasvlakte (4 on fig. 30). This is a new establishment of the Europe Container Terminus (ECT), the headquarters of which are situated 25 kilometres farther inland on the Eemhaven, in the immediate vicinity of the city of Rotterdam (5 on fig. 30). The move to the Maashaven was decided upon because of the lack of room for expansion in the Eemhaven and the constant increase in the size of container ships. Nearly 300 hectares are available at the new site for further expansion. The ECT terminal on the Eemhaven is incidentally already the largest container transshipment establishment in the world; it handled more than 1 million containers for the first time in 1983. The new terminal on the Maasvlakte will function as a main port, from where the containers which arrive on the giant ocean-going ships will be transferred to smaller vessels for forwarding to other European ports - and vice versa.

III.2. Civil Engineering Works

III.2.1. THE DELTA PROJECT

The activities within the framework of the Delta project were concentrated during the past year almost exclusively on the construction of the pier dam in the Eastern Scheldt (see, for

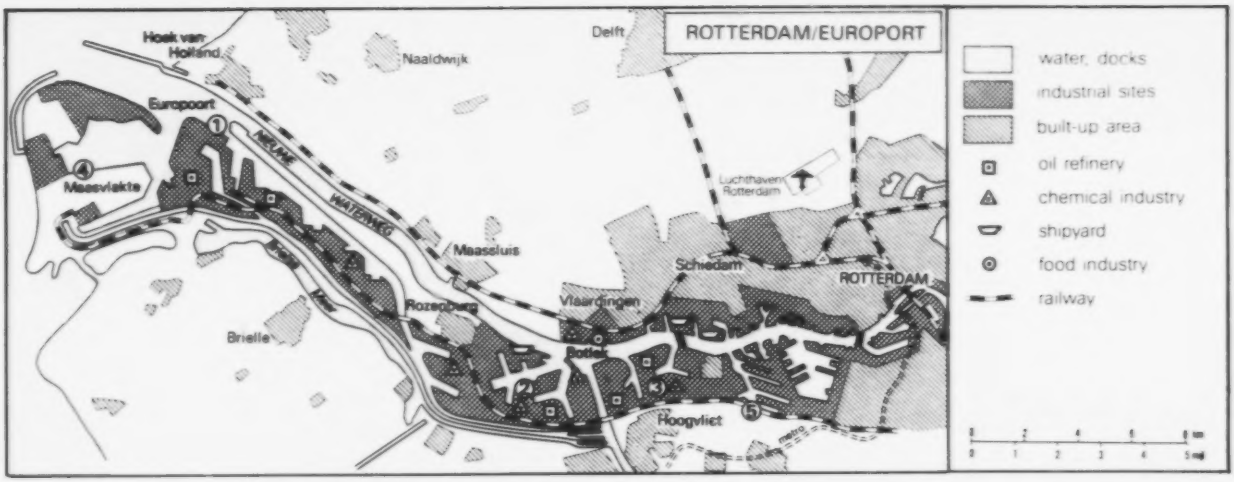


Figure 30 — The port of Rotterdam/Europort

example, the IDG Guide to the South West Netherlands, 3rd, Revised Edition, 1984, pp. 18-20 and p. 36, as well as Section III.2 in earlier issues of the IDG Bulletin).

In the first place, it was decided, after carrying out detailed measurements and making fresh calculations, that 62 openings would suffice instead of 63, so that a total of only 65 instead of 66 piers needed to be built for the three tidal channels. After the positioning of the first pier in August 1983 (see IDG Bulletin, 1982/83, p.48), the placing of the prefabricated piers continued according to plan. Since September 1984 all 65 piers have been standing in their carefully prepared positions on the seabed. A start was made in the summer of 1984 with the placing of the concrete spans and the first steel gate was mounted between two piers at the end of August (1 on fig.31, photograph XI).

Work is also proceeding steadily on the two additional secondary dams in the Eastern Scheldt project - the Philips Dam and the Oester Dam (2 and 3, respectively, on fig.31). It is hoped that the whole project will be completed in 1987.

The financial consequences of the Eastern Scheldt project have given rise to a lot of controversy in the Netherlands during the past year. The total costs of the project — not to be confused with those of the Delta project as a whole - are now estimated at 7 to 8,000 million guilders, which is considerably in excess of the amount on which Parliament based its decision in 1975. The question has been raised of how far this additional expenditure could have been predicted at the time and whether the estimates of the Ministry of Transport and Public Works were not too low. It is obvious that two of the conditions which Parliament attached in 1976 to the approval of the pier dam project - a limitation of the additional costs and completion by 1985 at the latest - cannot now be met. In view of the advanced state of the work, however, it is impossible to halt the project or change it radically.

The Dutch taxpayer is incidentally having ample opportunity to see how public money is being spent in the Eastern Scheldt: in the summer of 1984 the Information Centre on the Neeltje Jans work island received its millionth visitor.

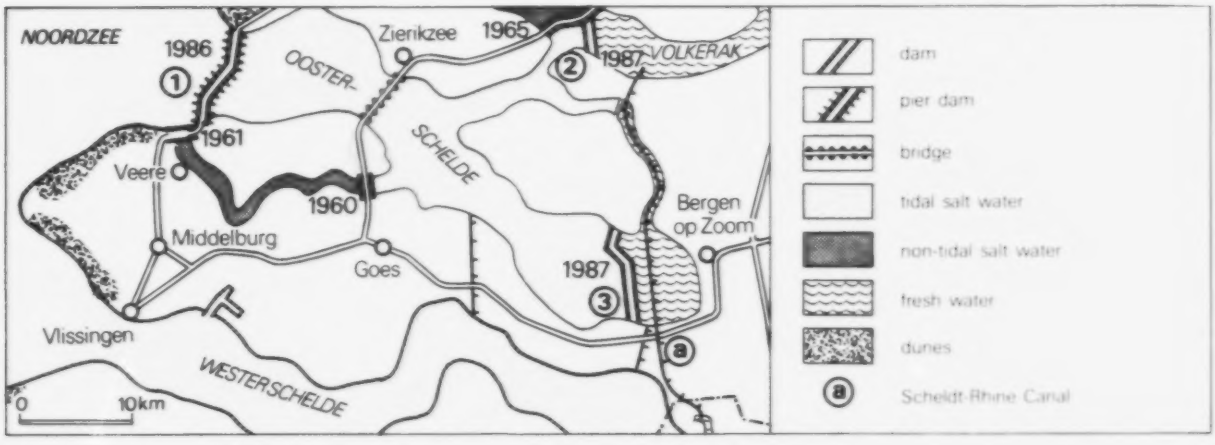
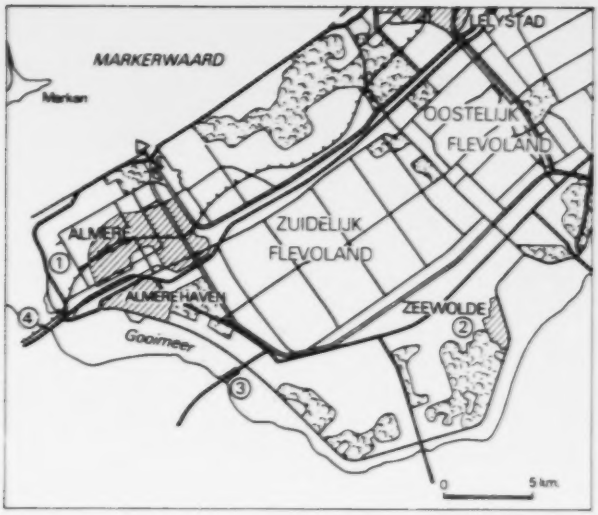


Figure 31 — The Eastern Scheldt works

III.2.2. THE ZUYDER ZEE WORKS

In *Southern Flevoland* the municipalities of Almere and Zeewolde were incorporated on 1st January 1984 (1 and 2, respectively, in fig. 32). Almere, a polynuclear city, which is planned to have 250,000 inhabitants by the end of the cen-



water
woodland, natural areas
built-up area
canal
major road
other roads
railway
(under construction)
pumping station

Figure 32 — Southern Flevoland

lies much more on building homes *within* and adjoining the existing cities. The aim is to use the urban area as intensively as possible (see photograph III, on p. 22). This applies not only to the residential function, but also to employment, social facilities, recreation, traffic and transport. In using space in the city, particular attention should be paid to the quality of the living and working environment and to the financial aspects. In urban renewal emphasis is placed on limiting the loss of dwellings, business and other premises. There are striking differences between the 1977 and 1984 plans in respect of the numbers of dwellings to be built in the major cities during the respective plan periods (Table 28).

Table 28 — Nos of dwellings to be built (1985 to 1989 inc.)

	Structure Sketch 1978	Structure Sketch 1984
Amsterdam	9,000	at least 25,000
Rotterdam	6,500	at least 20,000
The Hague	4,000	at least 8,000
Utrecht	2,000	at least 6,500

No further growth towns or centres are being designated and the special status of several of the existing growth municipalities will shortly expire. A few areas have been added to the Open Zones between the urban regions (see fig. 19, p.19).

Photo XII — The centre of Lelystad, looking north, with the embankment and the site for the station of the Flevo railway on the left. Centre foreground, the recently opened town hall of Lelystad.

III.4. Miscellaneous

III.4.1. ENERGY AND THE ENVIRONMENT

New statistics published by the National Geological Service in the autumn of 1983 show that Dutch natural gas reserves are 440,000 million cubic metres greater than had been assumed. The proved reserves of all the Dutch gasfields now amount to 1,927,000 million cubic metres.

It was recently announced that the subsidence resulting from the extraction of gas in the largest gasfield - that of Slochteren in the province of Groningen - is greater than was originally assumed. It now amounts to 12 cm and will reach 60 to 70 cm in the middle of the next century. Dealing with the consequences of subsidence in the flat polder country is very costly, involving expenditure on the repair of bridges, locks and buildings, the raising of embankments etc. The exploiter of the gas, the Dutch Petroleum Company, makes a considerable financial contribution towards the costs of this restoration work.

As a result of the increasing production of natural gas, particularly from the Dutch section of the Continental Shelf (North Sea), 12% of Dutch gas consumption in 1983 was accounted for by natural gas from under the sea. In 1982 the proportion was 7%, and the figure is expected to increase to 20% or more within a few years.

Meanwhile, further plans have also been developed for the production of alternative, 'clean' energy. The plans include the building of hydro-electric plant at existing weirs in the Rhine and Maas.

Work is also pressing ahead on developing the use of wind power. A wind turbine with an annual capacity of 700,000 kilowatt is to be built on the Maasvlakte at the westward end of the port of Rotterdam. The structure will consist of six independently operating vanes mounted on a single mast.

Use of environmentally-friendly energy sources is obviously an urgent necessity in a densely populated and intensively used country like the Netherlands. The woodlands - including those in the largest forested district, the Veluwe - exhibit clear signs of damage by acid rain. The increasing use of cheap imported coal - natural gas-fired power stations are being converted to burn coal - is not helping the situation. Strict environmental controls, aimed at such things as desulphuration of smoke and the use of lead-free petrol are in course of preparation. International collaboration is needed in this field.

As far as water pollution is concerned - in particular that of the rivers flowing through the Netherlands - an important event occurred in the autumn of 1983. The French Assembly approved the Rhine Salt Treaty. This is one political step along what is still a long road. Under the treaty which has now been concluded the salt load of the Rhine will decrease by at most 6% over several years. It is still not clear what is to happen with the waste salt from the Alsace potash mines and the approval of the treaty has met with much opposition in that part of the world.

III.5. Excursions, addresses

Previous issues of the IDG Bulletin included a list of addresses of museums, exhibitions, information bodies etc. intended to help people preparing field trips to the Netherlands or wishing to obtain information directly from particular bodies. This list is repeated below with a number of changes. We would refer in particular to the new address of the *Topografische Dienst* (Topographic Service) given on p. 50. This body moved from Delft to Emmen (in the province of Drenthe) in October 1984. The old premises in Delft (Westvest 9) have been retained as a sales point.

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMBER
Aalsmeer, Flower auction	Mon-Fri, 7.30-11	Legmeerdijk 313, 1431 GB Aalsmeer 02977 - 34567
Amsterdam		
Historical Museum (history of the city)	Tues-Sat, 10-17, Sun 13-17	Kalverstraat 92, 1012 PH Amsterdam, 020 - 255822
Aviodome National Aviation Museum	10-17 (Nov/Mar, closed Mon)	Schiphol, Amsterdam, 020 - 173640
Netherlands Maritime Museum	Mon-Sat 10-17, Sun 13-17	Kattenburgerplein 1, 1018 KK Amsterdam, 020 - 254175
Town Planning Department Urban Development Exhibition	Tues-Fri, 12.30-16.30 Thurs 18-21	Keizersgracht 440, 1016 GD Amsterdam, 020 - 222962
Arnhem		
National Folklore Museum "The Netherlands Open Air Museum"	May/Aug, 9-17.30, Sun 10-17.30 Apr/Sept/Oct 9-17, Sun 10-17	Hoeferlaan, 6816 SG Arnhem, 085-452065
Biddinghuizen (E. Flevoland) Flevohof – exhibition of Dutch agriculture	8.30-18	Spijkweg 30, 8256 RJ Biddinghuizen, 03211 - 1514
Broek op Langedijk Museum Broeker Veiling (Auction Museum)	Apr/Sept, Mon-Fri 10-17	Voorburggracht 20, Postbus 1, 1720 AA Broek op Langedijk, 02260-3807

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMBER
Delta Region		
Delta Expo	Mar-15 Nov. 10-17, 16 Nov/Feb. by appt. only	Haringvliet Locks, 3251 LD Stellendam 01879 - 1600 (for appts. 16 Nov/Feb, National Tourist Office, Vlietweg 15, 2266 KA Leidschendam, 070 - 705705
Eastern Scheldt Works (visit by bus to construction site of Eastern Scheldt dam, Information centre)	Apr/Oct: 10-17 Nov/Mar: Wed-Sun 10-17	Burgsluis, Schouwen-Duiveland (bus departs from here every half hour for the work island). Information Centre Work Island 'Neeltje Jans', 4328 ZG Burgh-Haamstede, 01115 - 2702
Enschede		
Twente – Gelderland Textile Museum	Tues-Sat, 10-12 and 14-17, Sun, 14-17	Haaksbergerstraat, Enschede, 053 - 319093
Haarlemmermeer		
Cruquius Museum (in former steam pumping station; polders, draining etc.)	Apr/Sept: 10-17, Sun 12-17 Oct/Nov 10-16, Sun 12-16 Dec/Mar, by appt. only.	Cruquiusdijk 27, 2141 EW Vijfhuizen, 023 - 285704
Heerlen		
Geological Museum	Mon-Fri 9-12 and 14-16 Excursions by appt.	Voskuilenweg 131, 6416 AJ Heerlen 045 - 711910
Kerkrade		
Mining Museum, Rolduc Abbey	Tues-Fri 9-17 May/Oct: Sat 13-17 July: Sat-Sun 13-17	Heyendahllaan 82, Kerkrade 045 - 457138
Kinderdijk, 19 windmills	Apr/Oct: Mon-Sat 9.30-17.30	near Alblasserdam, 01859 - 4118
Koog aan de Zaan, Mill Museum	Tues-Sun 14-17	Museumlaan 18, 1541 LP Koog aan de Zaan, 075 - 215029
Lauwersoog, Expozee (drainage and reclamation of the Lauwers Sea; Wadden Sea)	Tues-Fri 10-17, Sat-Sun 14-17	Expozee: Strandweg 1, 9976 ZA Lauwersoog, 05193 - 9045
Leiden		
National Museum of Geology and Mineralogy	Mon-Fri 10-17, Sun 14-17	Hooglandse Kerkgracht 17, 2312 HS Leiden 071 - 124741
Lexmond		
Exhibition Government Service for Land and Water Use (land consolidation in the River District)	by appt. only	De Laak 31, 4128 CA Lexmond 03474 - 2044
Limmen (NH)		
Bulb growing Museum	Apr/Sept: Mon-Fri 9-12 and 14-17	Dusseldorperweg 64, 1906 AL Limmen 02205 - 1950
Rotterdam		
Municipal Information Centre (films, slide sets etc.)	Mon 11-17, Tues-Fri 9-17 by appt. only	Municipal Library, Hoogstraat, 010 - 172929
Municipal Water Supply: ● Berenplaat Waterworks ● Kralingen Waterworks	by appt. only	Galvanistraat 15 (office), 3029 AD Rotterdam, 010 - 896811
Brabant Biesbos Water Authority: ● Biesbos Reservoirs	by appt. only	Galvanistraat 15 (office), 3029 AD Rotterdam 010 - 894116
Municipal Port Department (films, slides sets etc.)	by appt. only	Europoint III, Galvanistraat 15, 3029 AD Rotterdam, 010 - 894116
De Dubbelde Palmboom Historical Museum (urban history)	Tues-Sat 10-17 Sun 11-17	Voorhaven 12, 3024 RM Rotterdam, 010 - 761533
Schoonoord (Dr)		
De Zeven Marken Open Air Museum (Drenthe c. 1900)	Palm Sunday/Oct. 9-18	Tramstraat 73, 7848 BJ Schoonoord, 05918-1577
Sliedrecht (ZH)		
Dredging Museum	Tues-Sat 14-17 (for groups, other times possible by appt.)	Molendijk 204/208, 3361 ER Sliedrecht, 01840 - 14166
Tilburg		
Netherlands Textile Museum	Ma-Fri 10-17, Sat-Sun 14-17	Gasthuisring 23, 5041 DP Tilburg, 013 - 422241
Utrecht		
Hoog Catharijne Information Centre (Urban renewal project; film etc.)	by appt. only	Hoog Catharijne, Utrecht, 030 - 333141
Netherlands Railway Museum	Tues-Sat 10-17, Sun 13-17	Johan van Oldenbarneveldtlaan 6, 3581 XZ Utrecht, 030 - 318514

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMBER
Veendam Peat Colonies Museum	Mon-Fri and Sun 14-17	Kerkstraat 18, 9641 AR Veendam, 05987 - 16393
Vlaardingen Sea Fisheries Museum	Mon-Sat 10-17, Sun 14-17	Westhavenkade 53, 3131 AG Vlaardingen, 010 - 348722
Wageningen International Soil Museum (soils from all over the world)	Mon-Fri 8.30-17.15	Duivendaal 9, PO Box 353, 6700 AJ Wageningen, 08370 - 19063
Agricultural Research Dept.Visitors' Centre	Mon-Fri 9-17	Mansholtlaan 12, 6708 PA Wageningen, 08370 - 19119
Museum for historic agricultural equipment	Mon-Fri 9-12; 13.30-1o	Droevendaalsesteeg 50, 6708 PB Wageningen 08370 - 15774
Zaandam The Zaanse Schans (village of traditional Zaan timber buildings, with some windmills and various small museums)	July/Aug: 10-17 Sept/June: Tues-Sun 10-17	De Zaanse Schans, Kraaiennest 2, 1509 AZ Zaandam, 075 - 168218
Zuyder Zee Region "Nieuw Land" Information Centre (Zuyder Zee works general; films)	Apr/Oct: 10-17; Nov/Mar: Mon-Fri 10-17, Sun 13-17	Oostvaardersdijk, 8242 PA Lelystad, 03200 - 27799
Schokland Museum on the former island of Schokland (geology, history, archeology)	Apr/Oct: 10-17, Nov/Mar: Tues-Fri 10-17, Sat/Sun 11-17	Schokkeringweg, Ens, North East Polder, 05275 - 1396
Museum of Maritime Archeology	10-17; Oct/Mar: Mon-Fri 10-17, Sat-Sun 11-17	Vossemeerdijk 21, 8251 PM Ketelhaven, East Flevoland, 03210 - 3287
Zuyder Zee Museum (history of Zuyder Zee and environs; partly laid out as an Open Air Museum)	Mon-Sat 10-17, Sun 12-17	Wierdijk 18, 1601 LA Enkhuizen 02280 - 10122, (The Open Air Museum can be reached only by boat from the car park at the beginning of the dike to Lelystad)
NATURE RESERVES, NATIONAL PARKS, RECREATIONAL AREAS		
Visitors' Centres:		
Amsterdam Amsterdam Wood, "Bosmuseum"	Mon-Sat 9-16, Sun 10-17	Koenenkade, Amsterdamse Bos, Amsterdam 020 - 431414
Municipality of Amsterdam Water Supply Undertaking: visitors' centre in dune water catchment area	9-17; groups by appt. (tel. 023 - 288050)	Vogelenzangseweg, Vogelenzang, 023 - 246781
Castricum De Hoep Visitor's Centre (dunes)	May/Aug: 10-12, 14-17; Sept/Apr: Sun 13-16	Zeeweg, Castricum, 02518 - 52243
The Hoge Veluwe National Park, "De Aanschouw"	Apr/Oct 10-17	Houtkampweg, Otterlo, 08382 - 627
Overveen The Kennemer Dunes Visitors'Centre	15 Apr/15 Sept 9-16.30, 16 Sept/14 Apr Sat-Sun 9-16.30	Militairenweg 4, 2051 EV Overveen, 023 - 271871
Spaarnwoude Crayenstein Visitors' Centre (recreational area)	Apr/Oct: Sat 13-17, Sun 11-17 (at other times by appt.)	Machineweg 1, Halfweg, 02907 - 2644
Texel, Natural Recreation Centre (Texel and Wadden Sea)	Mon-Sat 9-17	Ruyslaan 92, 1796 AZ De Koog, 02228 - 741
Ossenzijl (Ov) "De Weerribben" (area of lakes and low peat in N.W. Overijssel)	Sat-Tues 13.30-16.30 Wed-Fri 10-16.30	Hoogeweg 27, 8376 EM Ossenzijl, 05617 - 272
Nederweert (L) "Mijl op Zeven" (De Peel peat bog)	Apr/15 Sept: 9-18, Sat-Sun 10-18	Moostdijk 8, 6035 RB Nederweert, 04951 - 41497
BOAT TRIPS/TOWNS		
Amsterdam – through canals and harbour	throughout the year	Rederij P. Kooy, Oude Turfmarkt 0/125, 1012 GC Amsterdam, 020-233810, and others
Rotterdam – through the port	throughout the year	Spido b.v., Willemsplein 20, 3016 DR Rotterdam, 010 - 135400

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMBER
OTHER BOAT TRIPS		
(limited selection, further information from: National Tourist Bureau, Vlietweg 15, 2266 KA Leidschendam, 070 - 705705		
Delta Region		
Haringvliet, from Rotterdam	July-Aug	Spido, Willemsplein 20, 3016 DR Rotterdam 010 - 135400
from Willemstad	Apr-Sept	Otter, Pr. Christinastraat 61, 4797 HP Willemstad, 01687 - 2814
Eastern Scheldt	Mid May-Sept	T. den Breejen, Zandkreekstraat 17, 4301 WJ Zierikzee, 01110 - 4995
Frisian Lakes		
from Leeuwarden		Stad Dokkum, Tijnjekade 31, 8936 AB Leeuwarden, 05100 - 39290
from Sneek		Harder en van der Werf, 1e Oosterkade 6, 8605 AA Sneek, 05150 - 17314
Loosdrecht Lakes		
from Utrecht	Mar-Oct	Rondvaartbedrijf Utrecht, Oudegracht t/o 85, 030 - 319377
from Loosdrecht	Mar-Oct	Wolfrat, Oud Loosdrechtsedijk 165, 1231 LV Loosdrecht, 02158 - 3309
Lake IJssel		
Urk-Enkhuizen	May-mid-Sep (non on Sun)	Friese Recreatie Onderneming bv., Jol 36, 8446 EZ Heerenveen, 05130 - 27030
Enkhuizen-Stavoren	mid-May-mid-Sept	Rederij NACO bv., Stationsweg, Alkmaar, 072 - 118846

ADDRESSES OF ORGANISATIONS NOT MENTIONED ABOVE

Amsterdam, Municipal Information Dept.	O.Z. Voorburgwal 197, 1012 EX Amsterdam	020-5529111
Amsterdam, Municipal Port Department	Havengebouw, De Ruyterkade 7, 1013 AA Amsterdam	020-221201
Central Bureau of Statistics CBS	Prinses Beatrixlaan 428, 2273 XZ Voorburg	070-694341
Department of Waterways, Delta Division, Information Department	van Veenlaan 1, 4301 NN Zierikzee	01110-8000
Foundation Public Relations Agriculture and Horticulture	Het Kleine Loo 284, 2592 CL Den Haag	070-474541
Government Service for Land and Water Use	Griffioenlaan 2, 3526 LA Utrecht	030-859111
The Hague, Municipal Information Centre	Groenmarkt 7, 2513 AL The Hague	070-122690
Information and Documentation Centre for the Geography of the Netherlands	Heidelberglaan 2, P.O. Box, 3508 TC Utrecht	030-531378
International Institute for Aerial Survey and Earth Sciences (I.T.C.)	Boulevard 1945, no. 350 P.O.B. 6, 7511 AL Enschede	053-320330
Ministry of Agriculture and Fisheries, Information Department	Bezuidenhoutseweg 73, 2594 AC The Hague	070-793911
Ministry of Economic Affairs, Information Department	Bezuidenhoutseweg 151, 2594 AG The Hague	070-814111
Ministry of Housing, Physical Planning and the Environment, Information Department	van Alkemadelaan 85, 2597 AC The Hague	070-264201
Ministry of Transport, Waterways and Communications, Information Department	Koningskade 4, 2596 AA The Hague	070-747474
Ministry of Welfare, Health and Cultural Affairs, Information Department	Steenvoordelaan 370, 2284 EH Rijswijk	070-949233
Association for the Conservation of the Wadden Sea	Voorstraat 18, 8861 BK Harlingen	05178-5541
National Geological Service	Spaarne 17, 2011 CD Haarlem	023-319362
National Historic Buildings Conservation Service	Broederplein 41, 3703 CD Zeist	03404-28122
National Physical Planning Agency	Willem Witsenplein 6, 2596 BK The Hague	070-264201
National Tourist Office	Vlietweg 15, 2266 KA Leidschendam	070-705705
National Water Supply Institute	Nieuwe Havenstraat 6, 2272 AD Voorburg	070-694251
Netherlands Interuniversity Demographic Institute	Prinses Beatrixlaan 428, 2273 XZ Voorburg	070-694341
Netherlands Railways, Educational Information Department	Moreelsepark 1, 3511 EP Utrecht	030-353630
Recreation Foundation	Statenplein 1, 2582 EW The Hague	070-500100
Rotterdam, Municipal Information Department	Coolsingel 40, 3011 AD Rotterdam	010-179111
Royal Netherlands Geographical Society, KNAG	Weteringschans 12, 1017 SG Amsterdam	020-277716
Royal Netherlands Meteorological Institute (K.N.M.I.)	Utrechtseweg 297, 3732 HA De Bilt	030-766911

Royal Netherlands Tourist Association, ANWB	Wassenaarseweg 220, 2596 EC The Hague	070-264426
Rijnmond Authority, Information Department	Vasteland 96-104, P.O. Box 23073, 3001 KB Rotterdam	010-111320
Soil Mapping Foundation STIBOKA	Staringgebouw, Marijkeweg 11, 6709 PE Wageningen	08370-19100
State Printing and Publishing House	Chr. Plantijnstraat, 2515 TZ The Hague	070-789911
Topographical Service	Bendienplein 5, 7815 SM Emmen	05910-96911
Utrecht, Municipal Information Department	Slachtstraat 12, 3512 BC Utrecht	030-328511
Dept. of Waterways, Information Department	*Koningskade 4, 2596 AA The Hague*	*070-264911*
IJsselmeer Polders Authority, Information Department	Zuidwagenplein 2, 8224 AD Lelystad	03200-99111

IV. ABOUT THE IDG

IV.1. Annual Report for 1983 and activities during the first three quarters of 1984

During the calendar year 1983, at a time when all kinds of activities in the educational and information fields were being cut back as a result of economy measures, the Information and Documentation Centre for the Geography of the Netherlands was able to continue its work without restriction.

The number of requests for information and documentation received at the Bureau of the IDG again exceeded the number received in any previous year. The figure this time was 1283, which was an increase of more than 9% over 1982.

New IDG publications which appeared during the past year included the third edition of the school wall map of the Netherlands in several languages and a completely revised third edition of the Guide to the South West Netherlands. The most important amendments to the guide concern the recent developments in the port of Rotterdam-Europort and the changes in the plans for closing the Eastern Scheldt within the framework of the Delta project, as well as their execution. *)

The first three quarters of 1984 were very much taken up by the activities surrounding the commemoration of the IDG's twentieth anniversary, which fell on 21st September 1984. In celebration of the event, the IDG - with the aid of a special subsidy from the Ministry of Foreign Affairs - organised in August a symposium and programme of excursions for foreign geographers. The more than thirty participants came mainly from countries outside Europe. The majority of them combined their visit to the Netherlands with attendance at the 25th Conference of the IGU in Paris. The IDG presented a new exhibition at the Conference, called *Change in the Netherlandscape*.

Within the context of the 20th birthday celebrations a booklet was published with the title *A Picture of a Country*, in which the manager of the IDG Bureau gives an outline of the way in which the IDG has supplied information about the geography of the Netherlands over the past twenty years. **)

*) An unfortunate error has occurred in the key to fig. 26 on p. 31 of the Guide. An erratum has been printed on p. 48 of the Guide, but there, too, the order of the explanations to the symbols is incorrect. Following the sequence of the symbols as printed on p. 31, the key should read as follows: Port and industrial sites – Residential areas – Parks, nature and recreational areas – Water – Major Roads – Railways.

**) This booklet has been published in Dutch and English editions and interested persons can obtain a copy from the IDG.

The booklet includes a statistical analysis of the 10,000 requests which the IDG received between 1964 and 1984, as well as the results of a user survey carried out in 1983 among more than 100 school textbook authors and publishers.

Some of the main points from the analysis of the 10,000 requests are summarised below:

Origin of the requests

Federal German Republic	3,148	Canada	99
Belgium	1,649	United States	418
United Kingdom	1,323	Latin America	123
France	854	Africa	171
remainder of W. Europe	1,187	Indonesia	110
Northern Europe	158	remainder of Asia	251
Southern Europe	194	Australasia	123
Eastern Europe	192	TOTAL (104 countries)	10,000

Status of the inquirers

Staff of University and Teacher Training Colleges etc.	1,846
Students of University and Teacher Training Colleges etc.	2,058
Primary/Secondary School Teachers	3,750
Primary/Secondary School Pupils	921
Authors of School Textbooks etc.	277
Publishers of School Textbooks etc.	246
Miscellaneous, not known	902
TOTAL	10,000

Prof. Dr. H.S. Verduin-Muller, who has been Chairman of the Centre's Board of Management since its foundation, has written the following review for this Bulletin to commemorate the twentieth anniversary of the IDG.

IV.2. Twenty years of providing information about the geography of the Netherlands

IV.2.1. INTRODUCTION

An anniversary is an opportunity *par excellence* for thinking about the present, but also about the past and the future. This is certainly the case where such socially promising developments as information and documentation are involved in relation to one's own subject field.

IV.2.2. ABOUT INFORMATION AS A CONCEPT AND AS A RAW MATERIAL FOR THINKING, DECISION-MAKING AND ACTION

IV.2.2.1. The concept of information

Information is defined in the literature as any input which is considered as a means of reducing uncertainty or of strengthening or increasing previous knowledge. Informa-

tion is consequently the raw material for our thinking, decision-making and action.
Information displays a great diversity of form and content. It may take the form, for example, of spoken or written texts, of visual representations, such as still or moving images, charts, diagrams, maps or sketches. There are also mixed forms, of which a good example is the audio-visual presentation.
The content of information can be extremely varied, covering such areas as factual data, statistics, events, drafts, feelings.
Information is being treated here in its original meaning, albeit formulated in contemporary terms. However interesting the history of the concept of information may be, lack of space does not allow it to be considered here.
The word 'media' has not been used above. In order to avoid any misunderstanding, it must be emphatically stated that the media, i.e. the channels along which the distribution of information can take place, are not being considered at this juncture. In popular usage the distribution channels are often very much confused with the content of the information. Consider, for example, a book, television or a map. The information is often overshadowed by the medium. This phenomenon is probably the result of what are sometimes very spectacular features of the medium. This means that the content of the information does not receive the attention which it so richly deserves on the grounds of its extremely important social function, i.e. that of removing uncertainty, or strengthening or increasing existing knowledge.

IV.2.2.2. Information as raw material

A raw material has the potential of being processed either to a semi-manufacture or to a finished product. Only if a material is 'seen' as a raw material can the transformation occur. This ability to see the raw material function is the result, so to speak, of an interplay of existing knowledge, technical skill and/or social utility. Now information is a true raw material. Input, *as such*, does not make a contribution to the deepening and refining of thought, decision-making and action. It does so only if it is recognised as making such a contribution, if it is correctly assessed. At that point input becomes information and it will become clear at the same time why, in the one case, input is picked up and processed, i.e. used, as information, whereas, in another case, nothing happens or can happen with it.
In order to obtain some understanding of the concept of information it has just been compared with the familiar concept of raw material. There is much similarity between the two concepts, but there is also one very great difference. Raw material usually disappears after processing; it becomes unrecognisable. With the raw material of information, however, the situation is different. After having served to set in motion or prosecute thought, decision-making or action, information remains intact. In other words, the raw material retains its original form after processing.
This has important scientific, political and social consequences, since it means that the information can be drawn upon again and reassessed as a raw material for thought, decision-making and action.
The genesis of thought, decision-making and action, which is set in train by information, must be imagined as a generation process, by which we mean that information, provided it is recognised and processed as raw material, leads to thinking/deciding/acting – stage I; augmented with new information, stage I leads to stage II, II to III etc.
The generation process usually proceeds slowly and erratically, since man has to fall back on his skill and that is by its nature limited. Moreover, other persons or institutions are nearly always involved in decisions and actions. The maturation process which underlies generation may even last for years, depending upon such factors as the specific qualities of the woman or man in question or the depth needed to reach a provisional or final finishing point. It is vital, therefore, that information which is collected and processed at all stages of the generation process is reliable and readily available.

IV.2.3. 1964-1984, TWENTY YEARS OF PROVIDING INFORMATION ABOUT THE GEOGRAPHY OF THE NETHERLANDS; GENESIS AND FUNCTIONING OF THE IDG

IV.2.3.1. Introduction

The information and Documentation Centre for the Geography of the Netherlands owes its existence to questions about inaccuracies about Dutch geography in foreign school geography textbooks. A member of the First Chamber asked these questions in December 1963. The government's reply, several months later, included a proposal to establish an IDG.
The establishment of the Information and Documentation Centre for the Geography of the Netherlands assumed the existence of a society in which geographical information of a high quality was essential and therefore indispensable, and in 1964 the information society was already beginning to take shape in the Netherlands.
In the period between 1964 and 1984 the IDG developed into an adult and fully-fledged institute. Three phases can be distinguished in its growth. We shall not consider further here the innovative contacts with the Information Department of the Ministry of Foreign Affairs in the spring of 1957, which preceded the establishment IDG. The time was not yet ripe for dealing with the information question at that level. The activities of the 'Vereniging Nederland in den Vreemde' (Netherlands Association Abroad) were regarded as sufficient.

IV.2.3.2. The phase of institutionalisation: September 1964 to April 1971

The first of the three phases was one of institutionalisation. The IDG's activities were concerned mainly with the correction of errors and omissions in foreign school and university textbooks dealing with the geography of the Netherlands. At an early stage, after consultation with the Ministry of Education, the Ministry of Foreign Affairs informed all the Dutch embasssies and consulates about the formation of the IDG. As a result a variety of questions on geographical topics (such as the Dutch coast, as well as agriculture, developing

suburbanisation and demographic trends) reached the Centre from all corners of the globe.
There was soon found to be a need for lists of geographical publications about the Netherlands. They were compiled in French, German and English with the help of geography colleagues. With the text corrections leaving the Centre and the answering of incoming questions, there began to be built up an international network of geographers who were found at a certain moment to have a need for good, reliable information and documentation about the geography of the Netherlands.
Authors of geography texts aimed at various educational levels, producers of audio-visual materials, publishers, teachers and trainee teachers of geography, geography students and lecturers formed part of the developing network. It is a network which now, in 1984, may be called unique on the grounds of its international character and its extent, viz. 10,000 clients in over 100 countries (April 1984).
At the request of the Ministry of Foreign Affairs, the IDG compiled the 'Compact Geography of the Netherlands'. There had been a need for such a Compact Geography for many years and now the IDG was there to supply it. Editions have appeared over the years in thirteen different languages. The Compact Geography in fact laid the foundation for the highly dependable information and documentation material of the IDG, which has come to be admired all over the world. The Compact Geography, with its 44 pages, consists of short chapters of text and specially designed maps and diagrams; in other words, text and picture are complementary. The text and maps are clear and are conceived in strict relevance to the theme. The pages are attractive and well laid out.
The A4 format is not only very suitable for a layout consisting of text plus map, but is also convenient to use, in photocopying, for example. A good quality paper has been used, which means that the booklet also stands up to use in the tropics. A general map of the Netherlands at a scale of 1:325,000 accompanies the Compact Geography. The booklet and the map are financed from the information material budget of the Ministry of Foreign Affairs.
An interesting problem arose in relation to the policy of the IDG. Starting from scratch was not difficult in itself: there was a demand for information and documentation about the geography of the Netherlands, and it was a demand which could be reliably met with the aid, if necessary, of specialist academic geographers. The task was clear, the two Ministries – of Education and Science and of Foreign Affairs – saw its usefulness and were accordingly very helpful, but the basic problem was the absence of a budget for the financing of a bureau and staff, despite the fact that the world economy was still in good shape during the 1960's. The reason for the budgetary problem was the new and highly unusual character of the work of the IDG, i.e. the provision of information about the geography of the Netherlands.
Equally new and unusual was the collaboration of universities and two government departments. It was therefore impossible to fit the IDG as it operated in practice into any existing formal policy framework, nor could it be made to fit into a budget.
The normal procedure with new activities is that money is first made available, but with the IDG, the work started first. The officials were presented with a *fait accompli*. After much, not to say endless, cutting and contriving, a legally acceptable solution was eventually devised and put into effect in the autumn of 1970. The IDG would be initiated by the university geography departments and the Royal Dutch Geographical Society in the form of a foundation. The capital for the foundation was raised and a Board of Management was appointed. The two Ministries were invited to be represented on the Board of Management in the persons of their departments of International Affairs (Education and Science) and Information (Foreign Affairs).
The Deed of Foundation was executed before the notary in December 1970. The way was now open to apply for a subsidy, but the economic conditions of December 1970 were no longer those of September 1964 ... A subsidy was finally granted in the early spring of 1971. It was just sufficient to pay for one employee working three days a week. Following an application procedure, Mr. H. Meijer was engaged on a part-time basis.
The first phase was over and the second began.

IV.2.3.3. The consolidation phase: April 1971 to September 1979

The information and documentation activities during the first phase provided ample experience for the work in the second phase, at least at the beginning. Mr. Meijer set energetically to work. Work on the correction of school textbooks continued and a start was made on placing announcements in foreign geographical periodicals about ways in which the IDG could help authors and teachers. Where and when it was considered necessary and desirable, direct contact was made at the request of the Ministry of Foreign Affairs with Dutch embssies and consulates. It is small wonder that there was a rapid increase in the number of queries received.
The IDG performed numerous and varied services for its foreign clients in the cause of propagating a reliable picture of the geography of the Netherlands. The Compact Geography was revised (the first edition was already three years old) and versions published in additional languages. A 'Pictorial Atlas of the Netherlands' was issued in parallel with the Compact Geography. In order to provide the foreign clients with up-to-date information about land use trends in the Netherlands, an annual Bulletin was published, beginning in 1974.
Because of its great variety of landscapes over short distances and its unique social and physical geography, the Netherlands is a very attractive country for excursions by students of geography. The geography faculties of foreign universities, teacher training colleges and a variety of institutions of secondary education make good use of this favourable circumstance. In order to canalise the many requests for material for geographical excursions, the IDG began to issue information and documentation tailored for the purpose (complete with descriptions of excursion routes). This at first took a very simple form, but the very large demand soon justified publication in print. The first guides to appear dealt with the traditional topics such as the Zuyder Zee works, the Delta project and the Randstad, but guides to less well-known, but geographically no less interesting regions, such as the Region of the Great Rivers, the North East Netherlands and South Limburg, soon appeared. The excursion material is published in four languages (Dutch, French, German and Eng-

lish), while the annual Bulletin is also published in Spanish. It will be clear that the second phase was one of consolidation. The IDG was firmly planted. The policy framework, as accepted by the Board of Management and originally worked out with some difficulty, proved to be highly satisfactory. Both the university geography departments and the two Ministries (Education and Science and Foreign Affairs) provided the Bureau with advice and practical help.

Information has repeatedly shown that the provision of high quality information and documentation is a labour-intensive activity, and the Board of Management tried at quite an early stage to obtain an increase in its subsidy to enable Mr. Meijer to be employed for four or five days a week. The Board eventually received the important and encouraging report in 1978 that a post for a five-day week had been created for Mr.Meijer. It was Mr. B.J.E.M. de Hoog, who for a long time represented the Ministry of Education and Science on the Board of Management, who was responsible, with his customary elan, for this financial feat. Unhappily, Mr. de Hoog died in the spring of 1984, but not before being able to see the full results of his work.

IV.2.3.4. The intensification phase: September 1979 to the present

The fifteen year-old IDG began its third phase in 1979 with an international symposium about the geography of the Netherlands (there were 29 participants from 21 countries). The boundary between the second and third phases can be less sharply defined than that between the first and the second, but there is nevertheless a remarkable difference.

As in every dynamic modern enterprise, the activities of the IDG in its third phase are rooted in what has gone before. On the basis of the experience gained in the previous phases and a factual evaluation of the quality of the information and documentation carried out among the network of clients, the aim now is to refine and increase the scope of the material as well as to provide more information. The 1979 symposium, held as part of the 15th birthday celebrations, is characteristic in this respect.

There is an increasing demand for high quality information and documentation about spatial trends in the Netherlands. This concerns not only the contents of teaching and study material, but also knowledge of the basis upon which decisions are taken. It should be mentioned in passing that the broader spectrum of questions is obviously related to the gradual extension of the subject and to social developments. The third stage in the existence of the IDG can rightly be characterised as a phase of intensification.

As a result of the international contacts and in response to invitations, Mr. Meijer has given talks and lectures about the geography of the Netherlands and the work of the IDG to universities in Western Europe and to institutions expressly concerned with geographical information and documentation, such as the German Geography Days, British geographical conferences, Didacta etc. There is also an increasing number of invitations to give groups of foreign geography students who are paying a study visit to the Netherlands a thorough grounding for their stay in the form of an introductory lecture. Numerous discussions are held at the IDG in Utrecht with foreign authors of school and university textbooks containing containing material about the geography of the Netherlands. The IDG devises and mounts exhibitions on aspects of Dutch geography. Examples are the Randstad exhibition (Moscow, 1976), the Netherlands ± Water (Tokyo, 1980), Change in the Netherlandscape (Paris, 1984). Although these exhibitions were designed in the first instance for the conferences or the International Geographical Union, they are subsequently sent all over the world (where necessary, with the texts on the panels being translated into the languages of the countries concerned).

The most characteristic element of the intensification phase up to the present, however, have been the carefully prepared bilateral school textbook conferences. At these conferences the authors from two countries or groups of countries not only discuss, but argue about the contents of school geography textbooks and the way in which the subject matter is expressed. Whereas in the earlier phase a hesitant start was made on such interchange between authors, what is striking about the present phase is the thinking through of the whole consultation procedure in as formally and materially precise a manner as possible. Thanks to efficient and fruitful consultation, the conferences can be of short duration, which saves time and money.

Bilateral school textbook conferences have been held or are planned with West European countries, in which connection special mention should be made of the collaboration with the Georg-Eckert-Institut für Internationale Schulbuchforschung in Brunswick. Within the framework of the commemoration of the 200th anniversary of diplomatic contact between the Netherlands and the U.S.A., the geography textbooks of these two countries have also been examined from the point of view of what they say about each other's geography. There have also been contacts with East European countries and with Japan for the purpose of reciprocal improvement of the content of geography textbooks. Reports of all the conferences have been published, usually in English.

A very special aspect of intensification is the comparative research into the definition of geographical terms in school and university geography textbooks in the Netherlands and Flanders. Fundamental differences had already been noted at the textbook conference held with Belgium in 1976. The research concerned was carried out under the auspices of the IDG and the GID, the Flemish sister organisation, at the request of the Nederlandse Taalunie (Dutch Language Union).

The year 1984 marks a salient point in this third phase of the IDG's existence in two ways. Firstly, through the celebration of the 20th anniversary, within the framework of which the IDG has organised two conferences: the symposium for foreign geographers referred to in the first part of this chapter and a one-day conference for Dutch geographers. In addition, the 10,000th request for information was received in April 1984. It came from a geography lecturer at the University of Cologne. This fact formed the occasion for the holding of a one-day 'Netherlands Symposium' at that university in collaboration with the Dutch embassy in Bonn.

IV.2.3.5. Summary of the results

The purpose of the above review was to bring some order into the account of the development of the IDG with referen-

ce to its activities. It would have been impossible to achieve completeness, but an attempt will now be made to summarise and evaluate the results of the work of the IDG under three headings.

Firstly

The basis of the IDG's activities remains the correction of, and giving advice about, the content of foreign school textbooks where they deal with the geography of the Netherlands. The improvement has now been such that the treatment of the Netherlands in foreign geography textbooks is regionally and thematically accurate and geographical in the modern sense. A comparison of foreign geography books of the early 1960's with those of recent years shows this very clearly. Foreign geographers are constantly drawing the attention of the IDG to the high standard of the treatment of the Netherlands in foreign geography books.
It is important, however, to call attention to the necessary corrections and continue to advise about content in response to geographical developments in the Netherlands and changes in foreign curricula. In addition, an eye must be kept on new editions and on the newcomers among the foreign geography books.

Secondly

A worldwide network of clients has been built up during the past twenty years, who make use of information and documentation about the geography of the Netherlands in some form in their work. They include authors, researchers, teachers, students etc., etc. The fact that this network is densest in Western Europe is due not only to the physical proximity of the Netherlands, but also to the high level of development of the subject in that country and the function of geography, including compulsory fieldwork, in curriculum planning within regular education in Western Europe. It is difficult to overestimate the importance of such a network; it brings the Netherlands both economic and cultural benefits. There are many proofs and indications of this.

Thirdly

The excellent documentation material in so many languages greatly stimulates interest in the Netherlands and also encourages visits to that country. This applies not only to study groups, but also to the growing phenomenon of cultural tourism. And the Netherlands does indeed have much to offer the tourist in the 'leisure society'. The user-friendly, but nevertheless accurate and dependable IDG material is an implicit invitation to a visit. Practice has shown that such visitors allow themselves time.
Your attention is requested finally for an interesting secondary phenomenon. The treatment of the Netherlands is coming to occupy an increasingly important place in foreign geography education, both in Europe and elsewhere in the world. This is a result of the fact that the teacher has available the IDG map of the Netherlands and IDG documentation material in his or her first or second language. The 'Compact Geography', in particular, is often used as a textbook.

IV.2.4. CONCLUSION

Internationally, the IDG has a very good name; firstly because it supplies information and documentation about the geography of the Netherlands, which is difficult material for foreigners, in a reliable manner and almost as a matter of course. Secondly, because the operation of the Centre is so well tailored to the information society. Foreign geographers are constantly asking about the policy basis of the IDG.

May the IDG continue to function to the same high standard in the future.

H.S. Verduin-Muller

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- The Northern Netherlands: leading article in Bulletin 1982/83 (pp. 7-42)

Periodicals

- T.E.S.G. (Tijdschrift voor Economische en Sociale Geografie; Journal of Economic and Social Geography)
  6x per year; partly in English
  Royal Dutch Geographical Society (KNAG), Weteringschans 12, 1017 SG Amsterdam

- Rotterdam-Europoort-Delta
  4x per year; in English
  Havenbedrijf der Gemeente Rotterdam, address: Europoint III, P.O. Box 6622, 3002 AP Rotterdam

Atlases

- Schoolatlas for secondary education
  Amsterdam, 1978, price: Hfl. 52,--. ISBN 90 280 0794 6
  Meulenhof-Educatief b.v., P.O. Box 100, 1000 AC Amsterdam

- De Grote Bosatlas; 49th rev.ed., 195 pp.
  Groningen, 1981, price: Hfl. 66,25. ISBN 90 01 12100 4
  Wolters-Noordhoff b.v., P.O. Box 58, 9700 MB Groningen

Topographical Maps

Topografische Dienst, P.O. Box 115, 7800 AC Emmen

- Scale: 1:10.000
  only in black-and-white; price: Hfl. 14,50
- Scale 1:25.000 and 1:50.000
  in black-and-white, price Hfl. 5,60
  in multi-colour print, price: Hfl. 9,90
  See page 59

A catalogue containing examples of the various maps may be obtained from the Topographical Service (price: Hfl. 3,50).

Transparencies

FIBO-Beeldonderwijs, Zeist: Series of colour-transparencies (textbooks in Dutch)
537 – De Zuiderzeewerken (20)
691-2-3 – Deltawerken (63)
384-5 – Waddenzee en Waddenland (Wadden Sea Area, 48)
386-7 – De Randstad Holland (40)
225 – Rotterdam (25)
219 – Amsterdam (20)
694 – Het Polderland (20)
696 – Langs de grote rivieren (the big rivers; 20)
697 – De kustduinen (the dunes; 20)
699 – Zuid-Limburg (20)
649-50 – De kust (the coast; 60)
651-2 – Laag-Nederland (Low-Netherlands; 60)
653 – Hoog Nederland (The 'High'Netherlands; 30)
647-8 – Onze waterwegen (waterways; 60)
638 – Ons drinkwater (our drinking water; 15)
662 – Tuinbouw (Horticulture; 20)
663 – Veeteelt (Livestock farming; 20)
664 – Recreatie en Toerisme (Recreation and Tourism; 20)
The prices vary between HFL.20,-- and Hfl.60,--, according to the number of transparencies.
For copyright and orders: FIBO-beeldonderwijs, Utrechtseweg 66-68, Zeist.

IDG, Utrecht
– The geography of the Netherlands in pictures. Series of 36 colour transparencies with explanatory text.
– The Deltaproject in pictures. Series of 40 colour transparencies with explanatory text.
– The Zuiderzeeworks in pictures. Series of 36 colour transparencies with explanatory text.
Obtainable from IDG, Utrecht (see inside front cover).

Meulenhoff-Educatief Amsterdam
– Series of colour-transparencies (aerial photographs) accompanying the textbook "De Geo Geordend III" (in preparation)
– Series of transparencies about the Dutch Wadden Zone (32 transparencies), ISBN 90 280 5282 8, Hfl. 79,75.
Slide commentary, ISBN 90 380 5312 3, Hfl. 13,50.

Polyvisie, colour slide series:
C 7400 – What is happening to the Wadden Sea? (72 slides)
K 9157 – The Water supply of the Netherlands (44)
K 3020 – Threatened landscapes (Tape slide presentation, 96 slides with tape cassette)
K 3015 – The energy supply of the Netherlands (36)
K 9101 - Sea becomes land (26)
K 9159 – Southern Flevoland (12)
K 9162 – The enclosing dam (12)
K 9163 – Dike construction (12)
K 9164 – Reclamation (12)
K 9152 – The Dutch Coast (31)
K 9158 – Our modern ports (24)
K 9161 – Europoort (12)
K 9168 – De Nederlander en het water (The Dutchman and Water; 12)
K 9169 – Economische aspecten van Nederland (Economic Aspects of the Netherlands; 24)
K 9173 – Rotterdam, gateway to Europe (12)
K 3018 – The Blast furnaces (12)
K 3019 – Netherlands Railways (12)
Prices vary from Hfl. 11,50 to Hfl. 130,00, dependinmg upon the number of slides.
For copyright and orders: Polivisie, 's-Gravenlandseweg 78a, Hilversum.

Wall Maps

Van Goor Zonen, P.O. Box 70707, 1007 KS Amsterdam
– Staatkundige kaart van Nederland (The Netherlands; provinces, with blank work map on the reverse side);
ISBN 90 10 030350, 1 : 275,000. Price: Hfl. 184,25

IDG/Ministry of Foreign Affairs
– Wall Map of the Netherlands, 1 : 325,000 (types of landscape; 3rd revised edition, 1983)

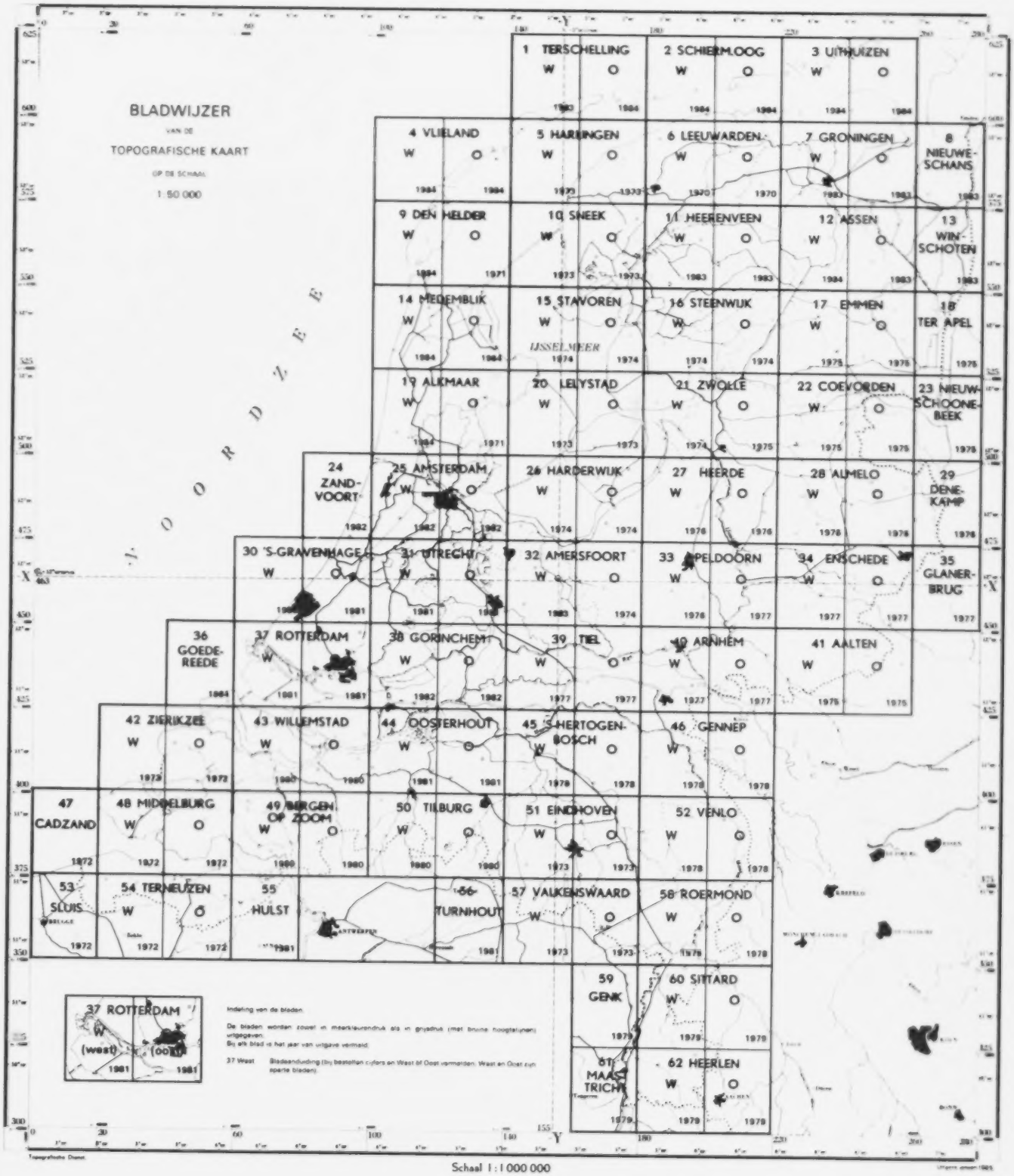
Wolters-Noordhoff, P.O. Box 58, 9700 MB Groningen
– The Netherlands, General, 1 : 275,000, ISBN 9001 961 76 2; ..... Hfl. 177,50
– The Netherlands in European Space, 1 : 750,000, ISBN 9001 96081 2; ..... Hfl. 177,50
– The Netherlands - relief, 1 : 300,000, ISBN 9001 96083 9; ..... Hfl. 177,50
– The Netherlands – land use, 1 : 300,000, ISBN 9001 96082 0; ..... Hfl. 177,50
– The Randstad Holland, 1 : 115,000, ISBN 9001 96084 7; ..... Hfl. 177,50

Malmberg, P.O. Box 233, 5201 AE 's-Hertogenbosch
– Satellite photomap of the Netherlands, 1 : 275,000, with explanatory booklet (in Dutch); ..... Hfl. 40,00

Meulenhof-Educatief, P.O. Box 100, 1000 AC Amsterdam
– Wall map of the Netherlands scale 1 : 250,000, 120x157 cm, with relief map which can be written on printed on the reverse,
ISBN 90 280 5018 3, Hfl. 245,--

IJsselmeer Polders Authority, Lelystad
– Flevoland, Land Use; 1 : 50,000, Hfl. 10,--

CARTO, Gaucheretstraat 139, 1000 Brussels, Belgium
– Wandkaart van Nederland (Wall Map of the Netherlands; obtainable in a Dutch and a French version), scale 1 : 250,000.



Sheet index to topographic maps

Each of the lettered sections is a sheet in the 1 : 50,000 map series; each of these sections covers four sheets of the 1 : 25,000 series. For information about Water Control maps, Geological maps, Soil maps and Geomorphological maps (prices, addresses where to order) apply to the IDG.